THE BIOLOGIST

A Quarterly Journal Promoting Research Interest in the Biological Sciences

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HINTS FOR SCIENCE WRITING

(The following reprint of a reprint in the July 1, 1950 "Science Newsletter" is presented for the information of every member of Phi Sigma. It seems to the Editor that more of this sort of thing ought to be done. We were very frank in telling Dr. Watson Davis of the importance of his reprinting the late Dr. Slosson's article which originally appeared in 1921 and which is just as apposite today as it was thirty years ago. Dr. Davis not only agreed with us but gave us cordial permission to reprint the entire group of articles. Editor.)

DON'TS FOR WOULD-BE WRITERS OF SCIENCE

By the late EDWIN E. SLOSSON

(First Director of SCIENCE SERVICE)

Don't overestimate the reader's knowledge and don't underestimate the reader's intelligence. He may not know as much as you about this particular thing — let's hope not anyway — but otherwise he may be as bright as you are—let's hope so anyway.

Don't try to tell all you know in 500 words. Leave some over for another time. The clean plate rule does not apply here.

Don't think that because a thing is old to you it is known to the public. Many of your readers are still living in the nineteenth century; some of them in the eighteenth. Anything new to your readers is "news" to them if hung on a timely peg.

Don't leave out the human interest. Your reader is a human being even if you are only a scientist.

Don't forget that your reader is interrupting you every ten lines to ask, "Why?" "What for?" or "Well, what of it?" and if you don't answer his tacit question he will soon stop reading.

Don't think that you can make your topic more attractive by tricking it out with fairy lore or baby talk or irrelevant jokes or extravagant language. Bring out its real and intrinsic interest as forcibly as you can. Set off the red fire if you like, but be sure it lights up the object instead of drawing attention away from it.

Don't say "this discovery is interesting" unless you can prove that it is, and if you can prove it, you don't have to say it.

Don't suppose you must give bibliographical references to all the literature of the subject, but don't fail to give a clue by which the interested reader can get on its trail.

Don't fail to put your best foot forward. Otherwise you may not have a chance to use the other foot. Note the construction of the news story in any first-class paper. It is built up on the same logical system as the symphony or opera overture. The opening paragraph gives in succinct fashion the main point of interest, the gist of the story, just as the first movement of a musical composition expresses the theme or motif.

Don't expect the editor to explain why he objects to your manuscript. He is probably right in his verdict, but if you would make him give a reason for it, he will have to invent one and it would probably be wrong.

Don't back up too far to get a running start. Remember the man who wanted to jump over a hill. He ran a mile to work up momentum and was so tired when he got to the bottom of the hill that he had to sit down and rest. So will your readers. Ninety per cent of the manuscripts that I have handled in 20 years as an editor would have been improved by cutting off the first page or paragraph. Yet authors, like hens, kick on decapitation.

Don't imagine that you must add a pretty but superfluous paragraph at the end, like the coda of a sonata. The most effective close is to quit when you get through.

Don't shoot in the air. Aim at somebody. You may miss him, but you are more likely to hit somebody else than if you aim at nobody. Look out of your window and note the first person coming along the street. Imagine yourself stopping this man or woman on the sidewalk, and, like the Ancient Mariner, holding his or her attention till you have told your tale to the end.

Don't regurgitate undigested morsels. It is a disgusting habit.

Don't refer to notes or books while writing. Read up on the subject as thoroughly as you can, and take as many notes as you need; then put away all your notes and books out of reach and next day or at least an hour later lay clean sheets of paper on a clear desk and write out what you know about it, in your own way. Afterwards, preferably next day, read over your manuscript critically, verify your facts, correct your data, revise your English and add any essential points, but don't expect the reader to be interested in what is so uninteresting to you that you cannot keep it in mind a single hour.

Don't define a hard word by a harder word: Vladivostok is a hard word, but when a press correspondent arrives at Vladivostok he goes right on inland without stopping to explain that "this is a city south of Khabarovsk and east of Tsitsikhar." So, if you want to say "calorie," say it, but don't make it worse by "explaining" it as "the quantity of heat necessary to effect a rise of temperature of one degree Centigrade of a cube of water each dimension of which is one tenth part of the length of a bar of platinum and iridium alloy lying in the observatory of St. Cloud." If you think you must define the calorie say casually something like this, that 100 calories of energy can be derived from three cubes of sugar or from a small pat of butter, or explain that a man needs to expend 100 calories an hour to keep his body running, and 160 calories if he is working hard.

Don't think you must leave out all the technical terms. Use them whenever necessary without apology, and if possible without formal definition. People are not so easily scared by strange words as you may think. They rather like 'em. Kipling is read with delight by old and young, yet his prose and verse are crammed with technical terms. Having exhausted the military, nautical and mechanical vocabularies, he invented a new and unknown nomenclature for his story "With the Night Mail," and didn't stop to define one of the technical terms. In his "Just So" stories for the kiddies he sticks in long names like plums in a pudding. A Kipling dictionary has been published, but even the editor could not run down all the peculiar words Kipling had picked up. But the ordinary reader does not need the dictionary. He gets the meaning from the run of the story, for the story is so written that he will get the meaning as he runs. When the Great War (First World War) broke out everybody had to learn a new language for which there was no dictionary. But the war correspondent wrote without hesitation: "At zero hour the barrage was raised and the poilu and the doughboy sprang over the top, sticking their bayonets into the boche." And the man in the street read it without batting an eye, although the sentence contained half a dozen words not to be found in his vocabulary before. But if this sentence were being written by one of our conscientious scientists, he would word it in this fashion:

"At zero hour—to use the military term for the time set for the beginning of an offensive—the barrage—that is to say the line on which the artillery fire is directed—was raised and the poilu—this is a French slang term for soldier, meaning 'hairy' and corresponding to our 'rough-neck' and the doughboy—this is an American slang term for infantrymen derived either from the round buttons worn in the Civil War or the 'dobe' huts inhabited in the Mexican War or the pipe-clayed belts of the Revolutionary War or because the Secretary of War was named Baker—sprang over the top—that is to say, surmounted the parapet of the entrenchments—sticking their bayonets—a weapon invented at Bayonne, France, in 1650—into the boche—a contemptuous term referring to the Germans, probably an abbreviation of *caboche* or *blockhead* originally applied to Alsatians."

STORIES THAT SHOULD BE HANDLED WITH CARE

By Watson Davis

(Director of SCIENCE SERVICE)

Stories on this list should, in general, *not* be used, at least until they are thoroughly checked and investigated by several competent specialists in the subject. These are not forbidden stories, for some of the impossible things of today may become possible tomorrow, but scientific discoveries rarely come nowadays from accident or inspiration. They are usually the result of systematic research of many investigators.

General

Any "secret" scientific or technical process.

Any process of preparation, where the essential element is not disclosed, bearing a coined name.

Announcement of the sudden achievement of "what scientists have long sought for in vain," and rediscoveries of "lost arts."

Complaints of "a conspiracy of silence" against the inventor or other evidence of a persecution complex.

Sweeping claims of any sort.

"Supernatural" Stuff

Telepathy and mind reading.

Spirit manifestations of any sort.

Long range weather forecasts in general.

Long range weather forecasts based on animal habits.

Astrologists and horoscopes.

End of the world predictions for the near future.

Evil or beneficial influence of the number 13.

Evil or beneficial influence of the number 7.

Evil or beneficial influence of any number.

Stars affecting human events of destinies.

Phrenology.

Numerology.

Predictions based on lines of hand, or shape of nose.

Intelligence or character reading based on size and shape of features, handwriting or hands.

Charms, amulets, lucky coins and other such survivals of savagery.

Rediscoveries of lost prophetic books.

Animals that "think," " read minds," etc.

Medical

Hypnotic "cures."

Hypnotic treatments by nonmedical practitioners.

Mental treatments by others than physicians or psychologists.

Universal germ killers.

Any absolute cure of any disease.

Unauthenticated treatments of cancer, tuberculosis, colds and such diseases.

Cancer "cures."

Cures of deafness, blindness or baldness.

Doctors who advertise.

Cures for "male and female weakness."

Drugs for curing obesity and underweight.

Rejuvenation.

Electrical treatments for serious disorders.

Electric belts.

Electronic treatments by the Abrams or other such methods.

Spinal adjustments.

Whiskey as an antidote for snake bite.

Mad stones for snake bites.

"Marking" of children by experiences of mother before birth.

Determining or controlling of sex before birth.

Mineral waters as cures for disease.

Cure of rabies by a stone or by shooting the dog.

Physics and Mechanics

Perpetual motion.

Machines that produce more energy than they use.

Fuelless motors.

Chemicals that greatly increase gasoline mileage.

Fluids that recharge storage batteries.

Methods of burning water or ashes.

Chemicals that make coal burn hotter.

Rediscovery of supposed lost arts, such as hardening of copper.

Death rays.

Engine stopping rays.

Divining rods.

Intuitive methods of discovering water, oil, and minerals.

Transmutation of metals.

Animal and Plant World

Creation of life.

Spontaneous generation of life.

Sea serpents.

Seeds that grow after more than 300 years, especially that old chestnut about wheat in mummy cases.

Superhuman intelligence in animals.

Prehistoric and gigantic animals living today.

Gigantic snakes in temperate zones.

"Hearts," "nerves" or other animal-like organs in plants.

Inheritance of acquired characters.

Absolute proof or disproof of evolution.

Hybrids between unlike plants or animals: e. g., goat and pig, or carrot and beet.

Toads or frogs enclosed for many years in stones or rocks.

Animals (e. g., turtle or frog) living in the human stomach after being swallowed.

Living "Missing Links."

Man-eating trees.

Miscellaneous

Discovery of prehistoric men of gigantic or dwarfed size.

Ozone in sea-side, mountain or prairie air; radium water.

Messages from or to Mars or other planets; inhabitants of other planets.

"Moron" as synonym for "sex offenders."

People living to extreme ages, as 115 and 120 years.

Skeletons or mummies of "giants" (more than 7 feet tall).

"Squaring" the circle; trisecting the angle.

Moon's influence on weather, crops or people.

Influence of sunspots on animal propagation, death rate, etc.

Children "brighter than Einstein."

Discovery of the secret of the pyramids, sphinx or other ancient monuments.

Discovery and interpretation of ciphers in old books and manuscripts.

Lost continents, such as Atlantis and Mu.

Equinoxial storms.

Earthquakes are necessarily accompanied by volcanic eruptions.

Moundbuilders as a "mysterious civilization." (They are just plain Indians.)

ABOUT WRITING FOR SCIENCE SERVICE

("THE BIOLOGIST" OR ANY OTHER PUBLICATION, INCLUDING CAMPUS NEWSPAPERS)

In reply to inquiries about writing for Science Service, the following information is furnished:

Science Service invites the cooperation of competent writers, particularly those who are scientifically trained and engaged in research work. In general, it does not appoint correspondents on part-time or full salary. It does not appoint representatives other than its regular staff. It does not assign particular geographical territory or scientific fields to its correspondents.

Science Service material must have the approval of the scientific world and it is expected that those who submit material to us will prepare it with the cooperation and approval of the scientist whose work is being reported.

Science Service syndicates news and features to many subscribing newspapers in all parts of the world. The stories carried on our leased coast-to-coast wire and in our other newspaper reports are used in various parts of newspapers — news columns, editorial pages, Sunday feature sections and daily magazine pages. They are also used in magazines, among them the SCIENCE NEWS LETTER, published by Science Service each week. Science Service's field is the whole of science, in the widest sense of the word.

All news stories should have both news angle and science value. In all but exceptional cases, they should be written in the form, style and length customary in the news pages of a daily paper. Tell the news in the first paragraph or sentence. Usually, news stories are not signed by individuals but "By Science Service."

Three to four hundred words is the preferable length for news stories. A thousand words is too long for the average newspaper column. Look at a daily newspaper and note how few stories are longer than half a column.

News stories begin with a date-line showing the place of origin of news or where written. Thus: WASHINGTON. Copy should be typewritten, triple spaced. Put your name and address on your story.

Science Service pays professional and amateur writers whose material proves acceptable.

One cent a word is the minimum rate paid, on acceptance, and more is paid for stories of exceptional value and news interest. It does not pay scientists for coverage of their own researches.

The first consideration in a Science Service story is to tell about or interpret a scientific event. But the news stories must be so well written that large newspapers will use them without rewriting or revision, either in form or language. Tell your story so that those who know nothing about science will understand and wish to read it. Weave in the scientific background that the man in the street does not have. Use simple words. Make your story as graphic as if you were talking about it.

The credit line, "By Science Service," must stand for accuracy of content and comment. Check up facts, figures, names, dates, places, and if you are not an authority on the subject, get your story checked by some one who is. State on the MS. source of information, whether personal interview, letter, magazine, or otherwise. If from a scientific journal, give date and page number. It is necessary that title (Dr., Prof., etc.), complete name and initials, position, and location be given for all persons named. If the person quoted or giving information has had a chance to look it over, so state. (Whenever possible all Science Service stories are checked in this way.)

Science Service does not wish stories taken from second-hand sources, magazines, newspapers, etc. Whenever such sources have to be used, the material must be checked by an authority, or amplified from the original source under competent advice. Attach all the material — technical articles, statements, letters, etc.—used in preparing the story, since such material often helps. Material is submitted to Science Service at the risk of the reader. Prompt decisions are the rule.

Time is the essence of news. Rush in your copy by air mail. If you wire us, be sure it is at press rate, which is less expensive than night letter or any other rate. Timeliness is often more important than literary preparation. Science Service pays for authentic *information* (copies of new reports, etc.) of important science developments. Get the news to us promptly even when you have not time to write it.

Address communications to: SCIENCE SERVICE, 1719 N. Street, N.W., Washington 6, D. C. Telephone: NOrth 2255. (Or: Editor, THE BIOLOGIST, West De Pere, Wisconsin)

The Small College of Liberal Arts

The beginnings of higher education in the United States stem from the church. The phenomenal growth of state and municipal colleges and universities in recent years, and the development of a number of small private colleges into great universities, raises the question as to the continued value of the small college. Must it shoulder its way to to bigness or relinquish its claim to support? The answer will depend upon how well it can exercise the functions of liberal education. Can it perform these functions for a limited enrollment of carefully selected students as well, indeed even better, than can the large university? The small college cannot compete with the large tax-supported institutions in the wide range of courses offered, in the relatively low cost to the individual student, or in the expensive equipment necessary, particularly in the laboratory sciences. But it is free from limitations which these factors impose upon the liberal arts college in a great university. It can and should maintain its own standards of admission. If it is sufficiently well-established to command the support of private donors, it can and should maintain a strong faculty and sufficient facilities to do its self-limited work thoroughly well. It should devote all of its energy to the processes of liberal education. While the Christian college of liberal arts must be careful to avoid sectarian emphasis and refuse to lend itself to illiberal indoctrination, it cannot ignore the essential elements of the Christian tradition.

Education designed to liberate a person to live fully amid the complexities of modern life can no more ignore our Christian heritage and the moral and spiritual idealism of Christianity than it can ignore our democratic heritage and the scientific spirit with their political and intellectual ideals. For this reason the Christian college of liberal arts occupies a strategic position. When consciously and avowedly Christian in its objectives it can without embarrassment call the attention of its students to the principles of life and standards of value which, on the basis of human experience, promise the greatest freedom of mind and spirit. It can impartially acquaint its students with the values of their heritage and its roots in Greece and Palestine and Rome. As a private institution, the Christian college can avoid majority and, in most cases, minority pressures. It can survey the current scene in the light of emerging and self-correcting ideals. Wisely administered, it can point out the dangers of religious intolerance as it does of political bondage and intellectual bigotry. Social injustice and imbalance of economic privilege can be discovered and their causes uncovered. The Christian college can recognize the broadly spiritual nature of persons and can concern itself with the liberation of its students, not only in thought but also in feeling and action. The Christian college can invite the student to orient himself to all of the chief factors of human experience, and encourage him to essay an intelligent and sustaining faith in the search for a free and more abundant life for himself and his fellowmen.—Cyril F. Richards, in Denison—A Small College Studies Its Program.

WHOSE COUNTRY?

How long have the cockatoos beaten, white blossoms,
Among the green leaves; the galahs grey and the parrots
Fitting like flame among the darker greens?
How long have the sheep nibbled at the green shade,
The man waited, his arms gleaming sweat,
With his big-breathing horse beneath him and shade pressing down?
How long?
Now the real master has taken his own,
Driven the green and wandering tribes away;
Left only wind-wood black essentials, bearing
Red leaves like tiny spears of fire and saying:
"This is his country: Fire walked here."

Raymond Mathew
"The Bulletin," Vol. 71, No. 3653, p. 12
Wednesday, February 15, 1950
Sydney, N.S.W., Australia

Independent Thinking Need of University

Great Universities have lived longer than most governments. Only when they have become identified with some narrowly defined concept, or have been dominated by some power or pressure group, have they withered or lost their true usefulness to the world. To avoid this is not as easy as it appears. Some reactionaries see no hope for us except in a vain attempt to return to methods, practices and circumstances of the late 19th century. Others urge a revolutionary breaking away from all connection with the past, to embark on palpably dangerous experiment. There are countless variations in the social, political and economic schemes advanced, all in the name of the "betterment of mankind." This has been true from the beginning of civilization, and universities learned long ago that their defense, as well as their existence, was to remain centers of independent thinking. The moment that a university loses its independence, it is of course no longer a university.

If any one term expresses what Columbia stands for it is: intellectual independence. To sustain this independence is a continuing purpose of our whole university family. We expect to teach oncoming generations of students that intellectual, spiritual and political freedom has been the principal ingredient in American greatness. We shall make sure that they understand our country and its basic moral and physical aspects and see the close relationship between the aims of Columbia and the continuance of the American pattern of living.

As an independent, gift-supported University, we must move boldly, admit mistakes, and speak frankly about what we are doing. I think the public would quickly grow tired of institutional administrators who might endeavor to cloak themselves in an impenetrable mantle of nobility, rather than to get on with their jobs.—President D. D. Eisenhower, in a letter to Alumni.

Degrees Conferred

According to a recent survey conducted by the Office of Education, colleges and universities in the United States conferred approximately 430,000 degrees in the year ending June 30, 1949. This is an all-time high, practically double the number granted in the prewar peak year, 1939-40. The total includes 375,000 Bachelors' or first professional degrees, and 55,000 advanced degrees.

WHY THE LONG-TAIL RABBIT DISAPPEARED FROM FIELDS OF MASSACHUSETTS

By Raymond R. Camp

Nature, in a whimsical mood, is never dull and in her lighter moments has produced such things as two-headed trout, antlered doe deer, cream-colored black bears, men who believe snipe can be captured at night through the medium of a tow bag and a red lantern, and now a man who wants to know when Guatemalan long-tail rabbits were introduced in Massachusetts.

When this last inquiry reached our desk the initial reaction was to consider it with some suspicion. Certainly this was pardonable, in view of the epistles which find their way to this department, some concerning such matters as oyster hounds, grouse which fly in ever-diminishing circles, and the health-giving qualities of shallow water tea.

Upon a second and more careful reading, however, we realized the inquiry was initiated by a serious individual with a consuming thirst for knowledge. The very fact that the inquiry stemmed from a place called Metuchen, N. J., was almost enough to convince us of its sincerity, for certainly no individual willing to have mail addressed to him in town so provocative of limericks would engage in light correspondence.

"While visiting in Massachusetts last week-end," the writer explained, "I had the misfortune to run over a small animal which darted directly under my car. My host, to whom I explained the incident, was unable at first to identify the animal from my description, but eventually decided it was a Guatemalan long-tail rabbit. This animal, he explained, was introduced as a means of reducing the red fox population of that portion of the State. Please provide me with complete details on this rabbit."

By what might be termed "pure chance," we have a friend who happens to be a recognized authority on long-tailed exotics, and he has provided us with detailed information on the animal in question.

The Guatemalan long-tail, he explained, was introduced about two years ago, but has almost entirely disappeared. Biologists attribute this disappearance to two factors: physiological frustation, and stone walls.

The long-tails were initially introduced because of their ability to run down and kill red foxes, which they did. Unfortunately, the area of their release had a large gray fox population. The inability to overtake and kill this more elusive fox so frustated the long-tails that they ceased breeding.

The ultimate decimation of the long-tails, however, was attributed to stone walls. As there are no stone walls in Guatemala, the animals had no inherited instinct for dealing wiith them. When a long-tail in pursuit of a fox encountered a stone wall, his only recourse was to follow it, hoping for a break in this barrier which would permit him to pass through. As many Massachusetts fields are completely surrounded by such walls, without breaks, the long-tails invariably followed the walls until they ran themselves to death.

Undoubtedly, our friend pointed out, the long-tail which died under the wheels of that car was the last surviving member of his species. This dashes the hopes of some foxhound breeders, who had hoped to bring about a cross with the long-tail, thus creating a superior strain of foxhound.

As Walt Willis has had no success in his efforts to cross the beaver and retriever, to create the trout dog, which would gnaw down a streamside tree and retrieve the angler's fly from the branches, the foxhound-long-tail cross might also have been doomed to failure.

(*N. Y. Times*. 3 Sept. 1950)

FOOD CYCLES AT THE HOUSE THAT JACK BUILT

By Ralph W. Dexter

Kent State University, Ohio

This is the house that Jack built.
This is the clover that grew by the house that Jack built.
This is the bee that sucked the clover
That grew by the house that Jack built.
This is the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is the hawk, with talons tenacious,
That killed the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is the 'coon, silent and spry,
That fed on the hawk, with talons tenacious,
That killed the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is the fox, so cunning and shy,
That ate the 'coon, silent and spry,
That fed on the hawk, with talons tenacious,
That killed the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is the bear, huge and ferocious,
That crushed the fox, so cunning and sly,
That ate the 'coon, silent and spry,
That fed on the hawk, with talons tenacious,
That killed the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.
This is Jack, a hunter courageous,
Who shot the bear, huge and ferocious,
That crushed the fox, so cunning and sly,
That ate the 'coon, silent and spry,
That fed on the hawk, with talons tenacious,
That killed the snake, alert and voracious,
That devoured the toad that swallowed the bee
That sucked the clover that grew by the house that Jack built.

THE LAKE STATES FOREST STATION

Students who are seriously interested in forestry or its ecological aspects should become acquainted with the publications of the Lake States Forest Experiment Station, which is located at University Farm, Saint Paul 1, Minnesota, and maintained by the U. S. Department of Agriculture, Forest Service, in cooperation with the University of Minnesota.

The chief publications in recent seasons have been the numbered station papers. These were published at varying intervals, by different authors. Among those received, we note the following in the order of their receipt:

S.P. No. 15, Publications of the Lake States Forest Experiment Station, 1923-1948, January 1949.
S.P. No. 17, Control of Weeds in Conifer Nurseries by Mineral Spirits, by J. H. Stoeckeler, May 1949.
S.P. No. 18, Winter Injury and Recovery of Conifers in the Upper Midwest, by J. H. Stoeckeler and Paul O. Rudolf, June 1949.
S.P. No. 19, The Place of Forestry in the Economic Development of the Park Falls Area, Wisconsin, by Howard W. Mayne, July 1949.

- S.P. No. 20, Commodity Drain from Forests of the Lake States 1948, by Arthur G. Horn, April 1950.
- S.P. No. 21, Size-Class Distribution in Old-Growth Northern Hardwoods Twenty Years after Cutting, by I. H. Eyre and W. M. Zillgitt, July 1950.
- S.P. No. 22, Growth and Yield of Upland Balsam Fir in the Lake States, by S. R. Gevorkiantz and Lucille P. Olsen, July 1950.

Among other publications of the station are the series of Aspen Reports to which most of the midwestern forest technological institutions are contributing.

There are also the "Technical Notes." These are brief informative reports on recent developments or results of new procedures, etc. They are issued serially fairly frequently and mostly cover but one side of a standard 8½ x 11 inch sheet of writing paper.

The station also publishes an annual report. Mainly this deals with such topics as forest management, forest fire research, forest economics, farm forestry and forest wildlife research.

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Funds Needed for College Research

Government and industry this year are giving 200 colleges and universities about $125,000,000 for research, according to a *New York Times* survey. That's an increase of about 500 per cent over prewar years.

But the picture isn't as rosy as it seems. In the first place, soaring costs haven't spared the schools. A million dollars doesn't buy as much research as it did in 1939. Administrative expenses especially have risen sharply, and often research grants make no allowance for them. The colleges have to foot the added bill.

There's another big worry. The lion's share of the money goes for projects in the so-called applied sciences — fields where effort is toward finding practical application of principles already discovered in earlier fundamental research.

Even where funds are made available for basic studies, the feeling is that scientists will tend to steer their researches into avenues that may lead to practical results, because they know money is thus more likely to be granted.

The danger in all this attention to the practical is that fundamental studies vital to the expansion of the frontiers of knowledge may be neglected. Findings that today may appear remote from practical use suddenly take on value when linked with other discoveries or new needs.

Scientists fear that some important fields of study may be stagnated unless funds for "pure research" come to the colleges without strings. Most grants these days specify how the money shall be used, rather than leaving that question to the college scholars who may know far better where it is needed.

School authorities are disturbed by the tendency of fund-givers to emphasize the necessity for quick solutions to major scientific problems, like cures for cancer or polio. The givers sometimes act as if they won't be satisfied their money has been well spent unless answers are found within their own lifetimes.

Desirable as this may seem off-hand, it is not always the best approach to a serious scientific puzzle. In the end, funds given for pure research might prove the wisest and fastest way to achieve a cure for cancer. Money granted for specific undertakings related to known principles might turn out to be largely wasted.

A further fact dimming the research picture: too little money goes for exploration in the social sciences. Many schools get no grants at all for studies in economics, politics, and sociology. They limp along with what funds they can divert from tuition revenues normally consumed in other operations.

The fine irony in this situation has often been noted. We spend untold millions to develop new inventions for both peace and war. In the case of the atom bomb it was billions. Yet we virtually ignore the crying need for new social techniques to cope with these great creations. — *Iowa City Press-Citizen.*

NEW BOOKS

This section offers brief uncritical reports on the general content of recent publications in biological and related fields. Only the longer critical reviews will be signed. For quick location on library shelves, each notice will be preceded, wherever possible, by three groups of numbers, the first two of which will be the Dewey and the Library of Congress classified numbers respectively. The third group is the L.C. card number, for the convenience of Librarians.

ADVANCES IN GENETICS (Volume, III), edited by M. DEMEREC, Academic Press, 125 East 23rd St., New York, N. Y., 1950, 267 pp., $6.00
QH431.A1A3 575.082 47-30313

This symposium includes "Observations on the Cytology of Bacteria" by Berthe Delaporte, Ecole des Hautes Etudes, Paris; "Biochemical Genetics of Neurospora," by N. H. Horowitz, C.I.T., Pasadena; "Phenomenon of Position Effect," by E. B. Lewis, C.I.T., Pasadena; "Theory of Genetical Recombination," by A. R. G. Owen, Cambridge University, England; "Corn Breeding," by Frederick D. Richey, U.S.D.A., Tennessee; "Parthogenesis in Animals," Helsinki University, Finland.

AGRICULTURAL CHEMISTRY, by DONALD E. H. FREAR, (Vol. I, Principles of Agricultural Chemistry), D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y., 1950, 812 pp., 72 fig., $9.00.
S585.F84 630.24 50-6567

This first volume of a compendious work is divided into five parts. The first is devoted to the Chemistry of Carbohydrates by M. L. Wolfrom, of Lipids by J. B. Brown and of Amino Acids and Proteins by C. M. Stevens. In like manner, the second part is devoted to chemical processes of fundamental importance, such as enzyme action, oxidation and biophysical phenomena, all treated by separate specialists. Part III is devoted to Plant Chemistry, Part IV to Animal Chemistry and Part V to Soil Chemistry. Each chapter has its own copious bibliography. There are in all some twenty-two contributing authors, mostly from our larger educational centers and embracing institutions as far apart as M.I.T. and the University of California.

ANATOMY OF THE DICOTYLEDONS, by C. R. METCALFE and L. CHALK, The Oxford University Press, 114 Fifth Ave., New York 11, N. Y. 1950, 2 vols. 1500 pp., 3 plates, 317 fig., $25.00.

Assisted by M. M. Chattaway, C. L. Hare, F. R. Richardson and E. M. Slabber, the authors of this exhaustive and compendious work have at last supplied the botanical world with an up-to-date general reference on systematic anatomy to fill the long-antiquated 1908 translation of Solereder's "Systematic Anatomy of the Dicotyledons. As such, this work deserves a place on library shelves wherever botany is taught, especially where any emphasis is placed on systematics, anatomy or forestry. Pharmacologists and economic botanists will also find use for it because it is not too rigidly confined to the taxonomic aspects of anatomy. Each of some 263 plant families is treated under the following headings: general description, leaf, axis, wood, root, anomalous structure, phylogenetic and taxonomic notes, economic uses, genera described, literature. This last item is correlated with the general bibliography which numbers some 2535 references. This list is preceded by some thirty-three pages of lists of families in which certain diagnostic features (such as hairs, hydathodes, cork, crystals, raphides, etc.) occur. The forty-one pages of three columned index present over two thousand items. It is fairly safe to say that this is the most monumental botanical work in the postwar period.

APPLIED SILVICULTURE IN THE UNITED STATES, by R. H. WESTVELD, John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y., 1949, 590 pp., 102 fig., $6.00.
SD 143.W4 634.9073 Agr 49-460

This revision of the author's original work published in 1939 includes the chief advances of the past decade. One significant change has been the shift to man-hours of time instead of dollars and cents in estimates of costs and profits. Another is the use of the "Check List of Native and Naturalized Trees of the United States and Alaska" as authority for tree names. Bibliographies have also been brought up to date. One major feature of this book is the author's use of forest regions instead of silviculture systems as a basis for the arrangement of his material.

ATLAS OF HUMAN ANATOMY, by BARRY J. ANSON, W. B. Saunders Co., Philadelphia, Pa., 1950, 518 pp., Illus., $11.50

QM 25.A49 611.084 50-14335

This is a new work. The term "ilustrated" is a misnomer. There are so many illustrations—thirty-three on the first twenty pages—and so beautifully done are they, that this work attains almost to the "must" for any library that caters to students of human biology, anatomy, etc. The author, Dr. Barry J. Anson, is Professor of Anatomy at Northwestern University Medical School. Quite a representative number of the illustrations are in part color, sometimes three or four colors. Those who are familiar with the illustrations in the old "Gray's Anatomy" will welcome this very rich collection of carefully drawn plates.

BACTERIA, INTRODUCTION TO, by C. E. CLIFTON, The McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 528 pp., Illus., $5.00.

The general idea behind this entirely new text seems to be getting away from the old taxonomic approach of the classifiers and to stress the commoner types of bacteria from their biological and biochemical aspects. Just how different this approach is may be seen from a cursory listing of chapter headings, such as bacterial structure, protozoa and algae, fungi, classes of bacteria, viruses, energy requirements of bacteria, microbial respiration, metabolic groups, growth requirements of bacteria, their multiplication, death of bacteria, microbia variations, classification of true bacteria, soil bacteriology, water bacteriology, air bacteria, food preservation, industrial microbiology, infection and resistance, sereological reactions, enterobacteriaceae, and microbiology of infectious disease.

BIOCHEMISTRY, A Textbook, by PHILIP H. MITCHELL, The McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 695 pp., 90 fig., $6.00.

Appearing only four years ago in its first edition, this second edition evidences the acceleration that has gone on in the biochemical field in so short a time. The revision of the earlier work has been very thorough, no chapter having escaped some change. Chief among those which required complete reworking were those on foodstuffs and thiamines, enzyme reaction, hormones and chemotherapy. The advances in intermediary metabolism were among the fields needing most thorough revamping. These are only some of the desirable changes embodied in this new volume. There are actually some nineteen phases of the work which have been reworked.

BIOCHEMISTRY AND MORPHOGENESIS, by JOSEPH NEEDHAM, Cambridge University Press, 51 Madison Ave., New York 10, N. Y., 1950, 787 pp., 328 fig., 9.50.

First published in 1942, this important contribution to modern biochemistry, embryology and genetics did not receive the attention it deserved, probably due to the world disturbance of the time. Now that the Cambridge University Press has its own office in New York City, it is not unlikely that this great work will reach a much greater and more appreciative audience. The work is massive, with seven pages of glossary, six pages of key to the bibliography and sixty-nine pages of references, eleven pages of index, with separate indices for plants, animals and genes referred to, and a list of twenty-one "terms and concepts the use of which is not recommended." This volume is a veritable biological gold mine. There is nothing anywhere near like it in all our scientific literature.

BIOLOGICAL OXIDATION OF AROMATIC RINGS, edited by R. T. Williams, Cambridge University Press, 51 Madison Ave., New York 10, N. Y., 1950, 96 pp., charts and fig., $2.00 (in paper covers).

Bichemical Society Symposia No. 5, held at the London School of Hygiene and Tropical Medicine, 12 November 1949, includes articles on "The Oxidation of Aromatic Rings" by R. Schoental, "Orientation of Biochemically Introduced Hydroxyl Group in Benzene Derivatives" by J. N. Smith, "Oxidation of Polycyclic Hydrocartons in Animal Bodies" by L. Young, "Biological Significance of Metabolism of Polycyclic Compounds" by E. Boyland, "Biological Oxidation of Certain Aromatic Amino Acids in Mammals" by Rosalind Pitt-Rivers, "Biological Aromatization of Hydroaromatic Compounds" by I. Dickens, "Oxidation of Aromatic Rings in Microorganisms in Metabolism" by F. C. Happold.

BIOLOGY OF DROSOPHILA, edited by M. Demerec, John Wiley & Sons Co., 440 Fourth Ave., New York 16, N. Y., 1950, 632 pp., $10.00.
QL 537.M6D39 595.772 50-9549

The distinguished authors of this joint definitative and authoritative work are its best critique. Kenneth W. Cooper of Princeton discusses normal spermatogenesis; B. P. Sonnenblick of Rutgers treats of early embryology; D. F. Poulson of Yale handles histogenesis, organogenesis and embryonic differentiation; Dietrich Bodenstein takes over postembryonic development; G. F. Ferris continues with external morphology; Albert Miller of Tulane carries on with the internal anatomy and histology of the imago; and Warren P. Spencer of Wooster College concludes the Diosophila symposium with techniques of collection and laboratory culture. From all of which one might rightly conclude that never an insect has been so thoroughly or exhaustively studied. All of which, of course, is justified by the importance of the subject in the cytologic and genetic world.

BIOLOGY OF THE VERTEBRATES, by Herbert E. Walter and Leonard P. Sayles, 3rd ed., The Macmillan Co., 60 Fifth Ave., New York 11, N. Y., 1949, 875 pp., 727 fig., 3.00.
QL 605.W3 596 49-9458

This is a third edition of a standard text which has been on the textbook market since 1928. During its revision the senior author died, leaving to Dr. Sales the completion of the work. This has been done so carefully that one would have to have the original second edition in hand to discover the changes. They center mostly around vertebrate types, embryology, skeleton, nervous system and sense organs. This revised work will keep all the friends it had and will make a lot of new ones.

BIOLOGY, THE HUMAN APPROACH, by Claude A. Villee, W. B. Saunders Co., West Washington Square, Philadelphia 5, Pa., 1950, 580 pp., 250 fig., $5.00.
QH 308.V5 570 50-7905

Designed mainly as a one semester text for survey courses in human or general biology, but available also for a full year course, this book is built around the human and his organisms. Three of the early chapters deal with the physiochemical foundations of life activities, protoplasm and cellular action. Then follow plant and animal life. The heart of the book is made up of chapters on physiology and anatomy of organ systems. Then life in the reproductive processes is presented. There is one chapter on microorganisms and disease. The rest of the book is devoted to genetics, evolution and adaptation.

BIRDS OF THE WEST, by Ernest Sheldon Booth, Stanford University Press, Stanford, California, 402 pp., profusely illustrated, many color plates, $6.00.
QL683.B6 598.2978 50-8320

Illustrated by Harry Baerg and Carl Peterson, this slightly - more - than pocket-size volume should be well received by amateur ornithologists in all the states west of a line south from the eastern border of Montana, Wyoming, Colorado and New Mexico. The keys are accompanied by a description of each bird, its yearly range, nest and egg habits, and a drawing of the bird in question.

BOTANY, AN EVOLUTIONARY APPROACH, by R. DARNLEY GIBBS, The Blakiston Co., 1012 Walnut St., Philadelphia 5, Pa., 1950, 554 pp., 261 fig., 118 pl., $6.00.
QK47.G46 580 50-14390

As Associate Professor of Botany in McGill University, the Author of this entirely new botany has pitched out of the window the trite and traditional approaches to his subject. After twenty years of teaching elementary botany he has concentrated on the progression from the simple early evolutionary forms and progressed all the way up to the much more complex latest forms, the monocotyledons. All his illustrations are original, so are all of the plates. All of which guarantees a fresh approach to the study of botany. Whether any additional interest would have been added by a judicious use of fossil forms correlated with present types is an open question, especially since the book is crowded with information as it is. The index is really quite detailed, with close to 5000 entries.

BOTANY FOR GARDENERS, by R. P. FAULKNER, Charles Scribner's Sons, 597 Fifth Ave., New York 17, N. Y., 1950, 236 pp., 53 fig., 7 plates, $3.50.
QK46.F3 581 50-4182

The former head gardener at University College, Nottingham, here presents a background of general knowledge sufficient for the amateur gardener without refusing, as Sir Frederick Keeble says in the foreword, "to tackle the tough parts of the subject." The little manual of twenty-five short chapters runs through plant structures, energy, nutritional elements and their source, absorption, water relations, soilless cultivation, growth and extension, food storage and pereunation, propagation, hormones and growth substance, photoperiodism, carbon-nitrogen hypothesis, sexual reproduction, heredity, polyploidy, evolution and the gardener, seed development, fruit development, germination, plant "form," pruning, senescence and death, classification and nomenclature.

CARE AND BREEDING OF LABORATORY ANIMALS, edited by EDMOND J. FARRIS, John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y., 1950, 515 pp., illus., $8.00.

Fifteen nationally known authorities are here gathered into a symposium, each discussing the animal or animal group of his special interests. Amphibia are treated by R. C. Hutchinson of Jefferson Medical; birds by F. B. Hutt of Cornell; the cat by Alden B. Dawson of Harvard; the dog by Leon F. Whitney of the veterinary clinic by the same name; drosophila by Warren Spencer of Wooster; ferrets by T. H. Bissonette of Trinity; fish by Myron Gordon of the New York Zoological Society; guinea pigs by Heman L. Ibsen of Kansas State; hamsters by S. M. Poiley of the National Health Institute; the monkey by G. van Wagenen of Yale; the mouse by L. C. Strong of Yale; the rabbit by Paul B. Sawin of Jackson Memorial Laboratory; the rat and opossum by E. J. Farris of Wistar; reptiles by C. H. Pope of the Chicago Natural History Museum. The last, but by no means the least, contributor is W. E. Dane of the U. S. Industrial Chemicals, Inc., who discusses control of laboratory pests and parasites.

CELL AND PSYCHE, THE BIOLOGY OF PURPOSE, by EDWARD W. SINNOTT, University of North Carolina Press, Chapel Hill, North Carolina, 1950, 121 pp., $2.00.

The eminent position of the author as a scientist, as a cytologist and Director of the Sheffield Scientific School at Yale lends a definitely heroic note to this presentation. For an honest-to-goodness world-recognized scientist to hold private convictions on the purposiveness of the universe is one thing—something which our free world would not dare to deny him, even though it might sympathize with that particular form of willfulness which led him to stray from the herd-bound minds who affect to disagree with him. It is another and far more portentous thing for such a scientific leader to come out openly with a profession of faith such as this. One wonders what would happen to Dr. Sinnott if he were rash enough to do this in one of the countries behind the iron curtain. It is not nice to think about.

THE CHEMISTRY AND BIOLOGY OF PROTEINS, by FELIX HAUROWITZ, Academic Press, 125 East 23rd St., New York, N. Y., 1950, 374 pp., 52 fig., $5.50.

Dr. Haurowitz, Professor of Chemistry at Indiana University, has in this book to give a uniform outline of the present state of the protein problem. The main topics are protein structure, biological activity of proteins, and biosynthesis of proteins in the living cell. A large section of the book is devoted to enzymes, hormones and immunologically active proteins. Thus he has integrated chemical, physical and biological data into a unified picture of the nature of proteins, the most important constituents of living matter.

THE CHORDATES, by HERBERT W. RAND, The Blakiston Co., Philadelphia 5, Pa., 1950, 862 pp., 609 illus., $6.00.

QL605.R3 596 50-14391

Based on the author's years of experience in teaching, this new work casts discretion and classroom tradition to the winds. The author frankly admits that modern college students read little and cannot be expected to do more reading. For this reason he has added chapters on the history of atomic science, ideas and motives behind it, theories and principles on which it is based and, above all, its importance to humanity. The three parts of the book are therefore unequally divided over: (1) the basic structures of vertebrates, (2) the history, aim and method of comparative anatomy and (3) the morphology of the chordates from the protochordata to the mammalian nervous system.

COLLEGE BIOLOGY, by WILLIAM ETKIN, Thomas Y. Crowell Co., 432 Fourth Ave., New York 16, N. Y., 1950, 806 pp., illus.

QH308.E8 574 50-9583

Inspired by his work on the "Committee on Basic Concepts in Biology" of the Graduate Record Examination, Carnegie Foundation for the Advancement of Teaching, the author has succeeded in presenting the teaching world with a textbook which is not only new but different. The book is divided into three parts, of which the first is devoted to the mechanisms of the body under the headings of processes of living, digestion, chemical machinery and circulation. Part two is devoted to behavior, subdivided into movement, sensitivity, nervous system, hormones, and behavior patterns. Part three treats of the individual and the species and subdivides it under reproduction, development and growth, heredity, gene action and development. Part four discusses plant activities under basic importance of green plant cells, the physiology of higher plants, bacteria, organic communities, parasitism and disease. Part five embraces plant evolution and treats of evolutionary change, thallophytes, vegetative evolution of higher plants, reproduction in higher plants. The last part is devoted to animal evolution and follows the traditional routine from protozoa up to the mammals.

COMPARATIVE ANIMAL PHYSIOLOGY, edited by C. LADD PROSSER, W. B. Saunders Co., West Washington Square, Philadelphia 5, Pa., 1950, 888 pp., 312 fig., $12.50

Students in comparative physiology with a background in zoology and mammalian physiology should find this new textbook stimulating. Its main use will be as a standard reference by teachers in related fields or by beginning investigators. The twenty-three chapters are authored by the editor, who is Professor at the University of Illinois, assisted by Professors David W. Bishop, Frank A. Brown, Jr., Theodore L. Jahn, and Verner J. Wulff. They collaborated on this work in order to satisfy the need for a systematic organization of the diverse facts in the literature of comparative physiology.

CONSERVATION OF NATIONAL RESOURCES, edited by GUY - HAROLD SMITH, John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y., 1950, 552 pp., illus., $6.00.

Based on the second edition of Parkins and Whitaker's "Our National Resources and Their Conservation," this new book has been completely rewritten and therefore merits its new title. The galaxy of authors who have each contributed one or more chapters to this work enhance its value. Each is an authority in his own field. Each author begins with geographical and conservational facts about each of our resources, their extent and distribution, the use to which they have been put, the natural and human factors felt in this generation, and conservation practices needed in this country. Under these headings the following resources are discussed: soils and lands, forests, water and floods, minerals, wildlife and fisheries, recreation and man.

EFFECTS OF ATOMIC WEAPONS, edited by J. O. HIRSCHFELDER, DAVID B. PARKER, ARNOLD KRAMISH, RALPH C. SMITH and SAMUEL GLASSTONE. Rinehart & Co., 232 Madison Ave., New York 16, N. Y., 1950, 456 pp., Illus., $3.00.

This much discussed and publicized book covers the principles of atomic explosion; the description of air and underwater bursts; the shock from air, underwater and underground bursts and the physical damage therefrom; incendiary effects, nuclear radiations both initial and residuary as well as their measurement; decontamination procedures; effects on personnel and protection against physical damage either from shock or radiation. Some of the authors of the various sections write way over the head of the average nonphysicist. The important sections, however, for the layman interested in the effects of the A-bomb and protection against it are clear enough.

ELEMENTS OF AGRICULTURAL ECONOMICS, by G. W. FORSTER and MARC C. LEAGER, Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y., 1950, 441 pp., 43 fig., $6.65.

HD1411.F63 338.1 50-8987

Originally published as "Elements of Farm Economics," this second edition from the staff of North Carolina State College of Agriculture and Engineering analyzes several present-day farm problems. Among them are the Brannan proposals, the 1949 Agricultural Act, the Wheat Agreement, International Trade Organizations, etc. A somewhat unusual method of approach to farm economic problems is used. A problem is proposed, its nature explored and situations are described. Then practical solutions are illustrated and carefully evaluated.

ELEMENTS OF HUMAN PHYSIOLOGY, by MIRIAM SCOTT LUCAS, Lea & Febiger, Washington Square, Philadelphia 6, Pa., 1950, 357 pp., 158 fig., $4.75.

Chief improvements of this second edition over the first will be noted in the three rewritten chapters on the nervous system which take the place of the two which previously handled this phase. So also the chapters on Metabolism and nutrition, kidney and kidney functions, respiration, etc. In these changes Dr. Lucas has been influenced to no little extent by the attitudes and enthusiasm of her better students. Thus this work has become somewhat of a joint project which should appeal to intelligent students as well as their instructors.

EMBRYOLOGY OF ANGIOSPERMS, AN INTRODUCTION TO, by P. MAHESHWARI, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 453 pp., 216 fig., $6.00.

QK665.M22 581.3 50-14338

As Professor and Head of the Department of Botany at the University of Delhi, Dr. Maheshwari reflects credit on his institution in undertaking to supply a large gap in our botanical teaching manuals. One wonders why someone under more fortunate circumstances has not done this long since. As might have been expected, this manual presents much material that is not elsewhere available. This is particularly true in the chapters on embryology in relation to taxonomy and on experimental embryology.

EVERGREEN ORCHARDS, by WILLIAM H. CHANDLER, Lea & Febiger, Washington Square, Philadelphia 6, Pa., 1950, 452 pp., 66 fig., $6.00.

SB359.C38 634 Agr50-414

Students of horticulture rather than foresters were in the author's mind when this new book was planned. Many of the forms discussed are definitely exotic, but all are of commercial importance. Chapters two to eight are devoted to citrus growing. Then follow the avocado; papaya; tea, coffee and cacao; the annonas Myrtle Fruits; Litchi and related fruits; Mango and cashew; evergreen nut trees; the date and the coconut and African oil palm.

The last chapter is devoted to the banana. The author is Professor of Horticulture Emeritus at the University of California.

FIELD BOOK OF SEASHORE LIFE, by Roy Waldo Miner, G. P. Putnam's Sons, 2 West 45th St., New York, N. Y., 1950, 888 pp., 251 black and white plates, 24 in color, $6.00.

Twenty years in preparation by the distinguished Curator Emeritus of Living Invertebrates at the American Museum of Natural History, this handbook covers the commoner shore invertebrates from Nova Scotia to Cape Hatteras. Designed for the intelligent layman, the curious student and as a reference work for research workers, it compresses a surprising amount of information into its eight hundred and eighty odd pages. Thirteen hundred species of fourteen phyla from the protozoa to the lower chordates are described. Due to the use of bible-type paper, a fairly fine but readable type, the book has been compacted to a handy 7½ x 4 x 1¾ inch pocket size.

FIELD MANUEL OF PLANT ECOLOGY, by Frank C. Gates, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1949, 137 pp., 18 fig., $3.00.

QK901.G3 581.5 Agr 49-418

Sixty exercises covering a range much too large for a one semester course would be much to much of an assignment for any ordinary class, were it not for the fact that the instructor is at liberty to pick and choose such as fit the textbook being used and the region in which the course is being given. Among helpful features will be found detailed instructions for the use of quadrats, detailed instructions for the writing and organizing of papers reporting field trips.

FLORA OF ILLINOIS, by George Neville Jones. University of Notre Dame Press, Norte Dame, Ind., 1950, 368 pp.

QK157.J6 581.9773 50-4741

This new edition of the Jones manual of Illinois flora represents about 2200 species, an increase of 73 species over the last edition. The author has been slow to throw out old, familiar plant names in favor of proposed new names, or to join the ranks of the "splitters" and "variety" namers. The book is beautifully printed on heavy gloss paper and stoutly bound, but lacks illustrations. There is a bibliography and a list of taxonomic monographs and revisions, an author index and a glossary.

FLORICULTURE, FUNDAMENTALS AND PRACTICES, by Alex Laurie and Victor H. Ries, The McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 525 pp., 74 fig., $5.00.

SB405.L38 635.9 Agr 50-449

Eight years ago the first edition of this practical volume made its welcome appearance. This second edition incorporates, with all the desirable features of its predecessor, the newest advances and techniques in the field, notably those in pest control, mulches and water application. Although the book was prepared as a classroom text for the author's classes at Ohio State University, it should be a practical handbook for both amateur and professional gardeners and greenhouse proprietors.

FUNCTIONAL ANATOMY OF THE VERTEBRATES, by Daniel P. Quiring, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 624 pp., 257 fig., $5.50.

Based on the Levels of Being Theory, this text approaches its material with a more dynamic treatment of function. Special topics covered include detailed accounts of the endocrine system, a short review of anthropology. The fourteen chapters are headed: form and structure, classification, integument, skeleton, musculature, nervous system, sense organs, digestive system, respiratory system, circulatory system, excretory and reproductive systems, endocrines, anthropology and functional anatomy.

GENERAL BIOLOGY, by Gairdner B. Moment, Appleton-Century-Crofts, 35 West 32nd St., New York 1, N. Y., 1950, 680 pp., illus., $5.00.

QH308.M58 574 50-8179

This second edition of the original 1942 version has been considerably augmented by the addition of many new illustrations, increased stress on the importance of biological facts to humanity, and the introduction of the new concept of levels of organizations. The book is unevenly divided into one introductory chapter and nine devoted to plants, ten to animals and five devoted to purely biological concepts, such as reproduction, development, heredity, evolution and the history of life on this planet. Had some or all of these been placed either at the beginning of the book or just following the plant section, this manual would have been even more practical for those schools where botany and zoology are kept and taught as separate subdivisions of the one year freshman biology course.

GENERAL ZOOLOGY LABORATORY GUIDE, by JAMES T. TANNER, Burgess Publishing Co., 426 South Sixth St., Minneapolis 15, Minn., 1950, 144 pp., 63 fig., $2.25.

Beginning with a complete dissection of the frog in seventeen exercises, this course book then surveys the phyla of the animal world in ten more sessions. These are followed by exercises on ecological, cytological, genetic and evolutionary topics. The book is standard laboratory size, 8½ x 11 inches, spirally bound with heavy paper covers.

HANDBOOK OF AMPHIBIANS AND REPTILES OF KANSAS, by HOBART M. SMITH, University of Kansas Publications, Museum of Natural History, Lawrence, Kansas, 1950, 336 pp., 232 fig., price not given.

Published in response to requests from the people of Kansas, this well documented, thoroughly illustrated and interestingly presented volume is a credit to the state and its Museum of Natural History. Each species account is accompanied by two maps, one of North America showing the range of the species, and the other of the state of Kansas with the actual sites of recognition indicated by black dots and the presumed range shaded in. Although Kansas has produced several noted herpetologists, it is strange that their home state has been given such short shrift until now, especially since a cursory review of the distribution maps would seem to indicate that Kansas is a meeting or overlapping ground for several different ranges and habitats.

HISTORY OF BIOLOGY, by CHARLES SINGER, Henry Schuman, 20 East 70th St., New York 21, N. Y., 1950, 579 pp., 192 fig., $5.00.
QH305.S58 574.09 50-7001

This is the revised edition of the original work which appeared at Oxford in 1931, and later in America under the title of "The Story of Living Things." Since then it has been translated into both French and Spanish (in the Argentine). For those who are not familiar with one of the originals, we may summarize the contents as treating in the first part of the older biologists from Hippocrates to Harvey's discovery of the circulation of the blood. Part two gives the history of fundamental biology from Francis Bacon to Lamarck and Darwin. The third part is devoted to the emergence of the main themes of contemporary biology. Dr. Singer is not unknown in the United States, having given a series of lectures at the University of California in 1930.

HISTORY OF HORTICULTURE IN AMERICA TO 1860, by U. P. HEDRICK, Oxford University Press, 114 Fifth Ave., New York 11, N. Y., 1950, 551 pp., 32 plates, $7.50.
SB83.H4 634 50-6898

Starting out with Indian gardens and coming up the years through colonial gardens from New England to the South Atlantic Colonies, the story runs on through prerevolutionary gardening along the Atlantic Coast from north to south, then concentrates on their 1800-1860 development and on to the far west. It next takes up the botanical explorers, gardeners and their gardens, the dawn of plant breeding and ends with two nostalgic chapters on the horticultural literature and societies of the period. Professional as well as amateur horticulturists will, of course, enjoy this book. It will also have its appeal to historians inerested in the social and cultural life of the period.

HIVE AND THE HONEY BEE, Edited by ROY A. GROUT, Dadant and Sons, Hamilton, Ill., 1949, 652 pages. $4.00
SF523.G78 638.1 Agr49-430

The publishers of the American Bee Journal have commissioned Roy A. Grout and his associates to bring "Langstroth on the Hive and the Honeybee" up to date in an almost completely rewritten new work. Hence the twenty-three chapters are the individual contributions of some sixteen beemen, all specialists in their respective fields. Without undue exaggeration this volume might well have been called "an encyclopedia of bee-keeping."

THE HORMONES, CHEMISTRY PHYSIOLOGY AND APPLICATIONS, edited by GREGORY PINCUS and KENNETH V. THIMANN, Vol. II., The Academic Press, 125 East 23rd St., New York, N. Y., 1950, 782 pp., $12.50.
QP187.P47 612.4 48-9729 Rev

This is the second and final volume in a series of monographs on this important subject. Contributors to this half of the series include the senior author and L. L. Bennett, H. Blaschko, R. I. Dorfman, H. M. Evans, Harry Freeman, F. W. Landgrebe, D. Nochmansohn, S. H. Parker, W. T. Salter, M. E. Simpson and H. Waring. Their topics range through ovarian hormones, androgens, adrenal cortex, thyroid hormones, gonadotrophins, hypophysis and diabetes, chemical controls of nervous activity and clinical endocrinology. Each paper has its own generous bibliography. There are thirty-six pages of author index and forty-one of general index.

HOW TO LANDSCAPE YOUR GROUNDS, by LOYAL R. JOHNSON, A. T. De La Mare Co., 448 West 37th St., New York 18, N. Y., 1950, 257 pp., 152 fig., $3.50.

Students of landscaping as well as amateur gardeners will be interested in this revised handbook. Beginning with the location of a house, and planning of walks, drives and entrances, the author progresses through lawn planting, selection of trees and shrubs, pruning methods, flower gardens for color, wild gardens and soil improvement. Then follow four chapters which give lists of shrubs, acid soil plants, trees and vines. The last chapter gives thirty-one planting plans and keys for various areas of the country.

THE HUMAN SPECIES, A BIOLOGY OF MAN, by ANTHONY BARNETT, W. W. Norton & Co., 101 Fifth Ave., New York 3, N. Y., 1950, 280 pp., 16 plates, charts maps & tables, $3.75.
GN24B28 575 50-13274

This is an unusually different book, published without regard to cost. Many of the tables and charts are done in three colors, black red and blue. The fifteen chapters are presented under a tripartite division. The first, under the title of "Heredity and Reproduction," includes nature and nurture, Mendelism and man, and from egg to adult. The second, entitled "Human Diversity," includes from ape to man, human types, race theories, inequality of man, and sex differences. The third part takes up ". Life and Death." In it are discussed man and society, food and soil, food and nutrition, death, population and a final summing up. The author is an Oxford scientist who is now head of a British government research unit.

INHERITANCE IN DOGS, by OJVIND WINGE, Comstock Publishing Co., 124 Roberts Place, Ithaca, N. Y., 1950, 153 pp., 46 diag., 5 plates, $3.50.

Dr. Catherine Roberts has endeared herself to dog lovers everywhere by making Dr. Winge's Danish work into clear and readable English. Winge has worked with the English, Gordon and Irish Setters, the Cocker Spaniel, Short-haired and Wire-haired Bird Dogs, Pointers, Wire-haired Fox Terriers and Dachshunds. As a contribution to practical genetics, this book will be interesting to cytologists and geneticists also.

INTRODUCING THE INSECT, by F. A. URQUHART, Henry Holt & Co., 257 Fourth Ave., New York 10, N. Y., 1949, 287 pp., 160 fig., $5.00.
QL467.U7 595.7 50-897

The author is Director and Curator of Entomology at the Royal Ontario Museum of Zoology as well as Assistant Professor at the University of

Toronto. Frankly designed for the beginner, whether he be layman, a teacher who wants to give reasonably honest answers to his pupils or a student taking his first entomological course. For this reason unusual or rare forms or groups thereof have been omitted. The author's Chapter III on classification and identification and the key to the orders of insects are all very helpful.

INTRODUCTION TO PLANT PHYSIOLOGY, by OTIS F. CLARK and DANIEL G. CLARK, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 752 pp., tables and fig., $6.50.

This is an entirely new manual for plant physiology classes. Its contribution to the field seems to be in its stress on the application of physiological principles to horticultural and ecological problems. On this basis there are interesting approaches to all the phases of recent advances, such as hormones, weed killers, respiration concepts and radioactive tracer element techniques. Included also are discussions of frost hardening, death by freezing or desiccation, root growth, salt antaginism and factors affecting food translocation. All of these topics should bring courses based on this book, which, incidentally, originated at Cornell University, strictly into line with courses in horticulture, forestry and the like.

INTRODUCTION TO VERTEBRATE ANATOMY, by HAROLD M. MESSER, The Macmillian Company, 1948, 475 pp., 397 fig., $4.75.

QL805.M5 596 47-2035

This reprinting is the third of the 1947 revised edition. It contains all the desirable features of previous editions, plus the practical suggestions of several teachers who have used the manual in their classes. The number of illustrations has been increased.

KEYS TO WOODY PLANTS, by W. C. MUENSCHER, Comstock Publishing Co., 124 Roberts Place, Ithaca, N. Y., 1950, 108 pp., illus., $1.25.

QK481.M8 582.15 50-14257

This is the sixth edition of a handy manual which first appeared in 1922. It has been substantially improved by rearrangements and corrections in the keys. A few new species and nomenclature changes have been added. The reference list has also been increased by more recent publications on woody plants.

A LAMP IS HEAVY, by SHEILA MAC KAY RUSSELL, J. B. Lippincott Co., East Washington Square, Philadelphia, Pa., 1950., 257 pp., illus., $3.00.

RT51R8 610.73 50-5581

This is one of those chronicles of a small section of life about which the world knows little, and cares less, until it is flat on its back in bed. It is the story of a class of twelve young women who are taking the training course for nurses in a city hospital. From the day they enter as probationers until they graduate as registered nureses the author crowds into one story much of the tragedy and the humor, but most of all, the personality development of her heroine, Susan Bates. In a world of conflicting insecurities, this book is worth reading as a catharsis. Out of it rises a new respect for the nursing profession even though, to those who knew our army nurses in the service, it has always been high. It should be required reading for all those girls who are interested in nursing as a profession.

McCLUNG'S HANDBOOK OF MICROSCOPICAL TECHNIQUE, edited by RUTH McCLUNG JONES, Paul B. Hoeber, Inc. (Medical Book Department of Harper and Brothers), 49 East 33rd St., New York 16, N. Y., 1950, 790 pp., 142 fig., $12.00.

QH207.M25 578.8 50-9594

This is the third edition of a well and favorably known textbook, edited by the daughter of the late original author whose death was such a real loss to cytological science. There have been so many changes in microscopical techniques since the second edition appeared thirteen years ago, the editor has felt it wiser to drop the bacteriological and botanical aspects of the older work and concentrate on fuller reports of newer developments. The list of thirty-six major contributors to this new edition looks like a "Who's Who" in the field of American microtechnique and makes this valuable book a must for the library.

MAINTENANCE OF SHADE AND ORNAMENTAL TREES, by P. P. PIRONE, Oxford University Press, 114 Fifth Ave., New York 3, N. Y., 1950, 436 pp., 173 illus., $6.50.

This is the second printing of the enlarged and corrected 1948 second edition of a work which, from the critical estimates of many authorities, seems to hold a unique position of authority, probably by reason of its author's position as plant pathologist at the New York Botanical Garden. Aside from those professionally interested in the fields of tree surgery, park supervision and tree wardens, this book will be valuable to home owners since it is clearly and carefully written, with all the newest and most modern techniques included. The twenty page bibliography is subdivided by chapters.

MEDICAL ENTOMOLOGY, by ROBERT MATHESON, Comstock Publishing Co., 124 Roberts Place, Ithaca, N. Y., 1950, 612 pp., 242 fig., 4 plates, $7.50.
RC115.M3 614.43 50-5461

This is the second edition of a prewar (1932) textbook. As the result of wartime discoveries and procedures, it has been considerably changed. Chapters, ten, eleven and twelve, dealing with the mosquitoes, the diseases they transmit and their control, would have been simply invaluable had they been available in the SWPA between 1941 and 1945. It is good to see a manual which plays up the control measures. Public health people as well as professionally medical should be interested in this book.

METHODS OF TISSUE CULTURE, by RAYMOND C. PARKER, Paul B. Hoeber, 49 East 33rd St., New York 16, N. Y., 1950, 294 pp., 73 diag., $7.50.

With a chapter on synthetic media by Dr. Joseph Morgan of Connaught Laboratories, Toronto, and dedicated to Ross Harrison, Albert Fischer and Alexis Carrell, his former teachers, this second edition of a well-known and highly esteemed work open up new avenues of research. The first edition was restricted to the techniques in use at the Rockefeller Institute. In this new edition the major procedures of many laboratories are brought together. The number of changes in the entire book is too great to be summarized here. The Tissue Culture Association is preparing a 15,000 entry bibliography of the investigations involving tissue culture techniques. For that reason this manual has been kept down to as conveniently usable a size as its predecessor.

MICROBIOLOGY, WITH APPLICATIONS TO NURSING, by CATHERINE JONES WITTON, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 692 pp., 210 illus., $4.50.
QR46.W75 616.01 50-9791

Designed for student nurses, this textbook stresses absolute clarity of presentation. In it scientific gabbledygook reaches its lowest level in recent years. The writing is informal and the advice is straightforward and to the point. The seven chapters of part one treat of the structure and activities of microorganisms. Part two discusses their control. Part three takes up sources and modes of infection. Part four describes infection and immunity. Pathogens in general are taken up in part five, the pathogenic bacteria more extensively in part six. Pathogen other than bacterial absorb all of part seven. There is an appendix on laboratory methods.

MODERN GLASS WORKING, by M. C. NOKES, Chemical Publishing Co., 26 Court St., Brooklyn 2, N. Y., 1950, 157 pp., 96 fig., $3.75.

Completely reset with several new processes and diagrams, this handy volume of very necessary laboratory techniques will win new friends and keep all its old ones. Techniques are mostly based on monax, pyrex, hysil, phoenix and vitreous silica glasses. The chapter headings following the basic techniques, equipment and operations run as follows: repairing or construction of apparatus, sealing metals into glass, electric welding, vacuum tubes, photo-electric cells, diffusion pumps, leaks and sealing off, and measurement of low pressures.

NATIVE TREES OF CANADA, (No author), The King's Printer, Department of Public Printing and Stationery, Ottawa, Canada, 1949, 293 pp., profusely illustrated, $1.50.

This Bulletin 61 is the fourth edition of a work which has been reissued more or less regularly since 1917 by the Dominion Forest Service; Mines, Forest and Scientific Services Branch of the Department of Mines and Resources. It is a gorgeously printed work for its cost and should be in the library of any person or school interested in trees, not only in Canada, but in all the border states of the United States of America from Washington and Idaho to New Hampshire and Maine. Bound only in paper, the volume is jacketed with a glossy color photograph of autumn coloration which purchasers will want to clip and paste inside the book.

THE NUTRITIONAL IMPROVEMENT OF LIFE, by HENRY C. SHERMAN, Columbia University Press, 2960 Broadway, New York 27, N. Y., 1950, 270 pp., 13 tables, $3.75.

TX551.S517 641.1 50-8624

Dr. Sherman is Mitchell Professor Emeritus of Chemistry at Columbia University and has long been known as an authority on the chemistry of nutrition. He gave his name to the "Sherman Unit" as a measure of vitamins, and he has three other works on nutrition to his credit. This book covers nutrition as public concern and private adventure, the beginnings of nutritional research, its history from 1890 to the Second World War, principles and practice, internal environment and quality of life, improved nutrition and length of life, further human applications, and better nutritional status for more people.

OUR SOUTH, ITS RESOURCES AND THEIR USE, by EVERETT F. EVANS and ROY L. DONAHUE, The Steck Company Publishers, Austin, Texas, 1949.

HC107.A13E8 333.7 49-49487

Anyone who is familiar with the South and its potentialities will be interested in this book. Detailed discussions of southern resources—minerals, soil, water, forest, grass and wild life—are carefully presented. Both the good and bad sides of past management procedures are fully discussed. The book should do much to encourage a more intelligent approach to southern resources and an appreciation for those who are trying to preserve and even develop them.

PATHOGENESIS AND PATHOLOGY OF VIRAL DISEASES, edited by JOHN G. KEDD, Columbia University Press, 2960 Broadway, New York 27, N. Y., 1950, 235 pp., illus., $5.00.

This is the third symposium held by the section of microbiology of the New York Academy of Medicine. These papers are devoted to the new field of virology. There are fourteen and their twelve authors represent a galaxy of virological talent, whose pronouncements may be taken as the latest word on anything virological.

PEPTIC ULCER, by A. C. IVY, M. I. GROSSMAN and W. H. BACHRACH, The Blakiston Company, Philadelphia, Pa., 1950., 1144 pp., 210 tables, 133 fig.

RC840.I92 616.33 50-4047

Dr. A. J. Carlson of the University of Chicago says that, "This is a *must* book, not only for our colleagues in general practice but also for our colleagues in internal medicine, surgery, psychiatry and physiology." It is divided into four parts, the first considering such basic topics as the resistance of the stomach and duodenum; the second considers experimental, autopsy and clinical observations on ulcer pathogenesis; the third part deals with diagnoses; the final part discusses medical and surgical therapy. Each chapter begins with an outline and concludes with a summary and a very full list of literature references. The twenty-one pages of author index contain over five thousand entries.

PLANT BIOCHEMISTRY, by JAMES BONNER, Academic Press, 125 East 23rd St., New York 10, N. Y., 1950, 537 pp., illus., $6.50.

A new manual for classes or reference in biochemistry is offered by a member of the staff of the Kerckhoff Laboratories of Biology at the California Institute of Technology in Pasadena. It brings together and integrates much widely diffused literature and information on the biochemistry of higher plants. The thirty chapters are grouped into six parts of which the first deals with carbohydrates and their metabolism. Part two treats of the cell wall and its metabolism. The third handles plant acids and respiration. The metabolism of nitrogenous compounds takes up part four. Secondary plant products monopolize part five. The concluding part presents certain aspects of plant growth, and photosynthesis.

PLANT DISEASE HANDBOOK, by CYNTHIA WESTCOTT, D. Van Nostrand, 250 Fourth Ave., New York 3, N. Y., 1950, 746 pp., 111 fig., $7.50.
SB731.W47 632.3 Agr 50-430

Written as a companion to the "Gardener's Bug Book" by the same author, this present volume brings the pathological problems afflicting gardens and gardeners alike to the front. While not a text for strictly formal classroom use in plant pathology courses, it certainly has a place as side reading or for reference, largely because of its down-to-earth practicability. The first three chapters deal with general ideas; the fourth is a long alphabetical review of the more common plant diseases and their remedies. The fifth, final and largest chapter is an alphabetical list of house and garden host plants from Abelia to Zinnia and their known infectors.

PLANTS OF BIKINI AND OTHER NORTHERN MARSHALL ISLANDS, by WILLIAM RANDOLPH TAYLOR, University of Michigan Press, 311 Maynard St., Ann Arbor, Mich., 1950, 227 pp., 79 plates, $5.50.

Published with the permission of the Navy, this volume represents the results of five months collecting on Bikini and surrounding islands in the spring and summer of 1946 where Dr. Taylor was senior biologist of the technical staff attached to Operation Crossroads. Uniquely fitted for the position by reason of his previous work on the algae of the northeast coast of North America and on the dry Tortugas, Dr. Taylor has given the world its first complete study of any of the Micronesian Islands or their coral reefs. The treatise covers a history of previous explorations in the area, a description of the atolls and marine flora, the characteristics of the land flora, detailed botanical features all by way of introduction. The meat of the work is contained in the annotated catalogue of plants which runs through the algae, fungi, bryophyta and the spermatophyta. Nineteen new forms and species and diagnosed.

PRACTICAL INVERTEBRATE ANATOMY, by W. S. BULLOUGH, The Macmillan Co., 60 Fifth Ave., New York 11, N. Y., 1950, 463 pp., 167 fig., $4.50.

Beginning with Amoeba and Entamoeba, this new book progresses relentlessly straight through the phyla to Salpa, Doliolum and Amphioxus, dissecting in all some 123 genera. The drawings are very diagrammatic to prevent student copying. There is a general appendix on fixatives, preservatives, stains and other solutions. The chief merit of this work is its clarity at no sacrifice to brevity. Since the author belongs to the University of Sheffield faculty, most of his page by page references are British. There is, however, a good general reference list of fourteen titles, most of which are available in this country.

PRACTICAL SPECTROSCOPY, by GEORGE R. HARRISON, RICHARD C. LORD and JOHN R. LOOFBOUROW, Prentice-Hall, Inc., 70 Fifth Ave., New York 11, N. Y., 1949, 605 pp.

The high commendations this book has already received from many different scientific fields obviates any further comment. It covers spectroscopy as a scientific tool, selection of instruments, prism spectroscopes and spectrographs, diffraction gratings, care of equipment, illumination, spectrum photography, light sources, identification of lines, atomic spectra, molecular spectra, measurement of intensities, photometry, absorption spectrophotometry, qualitative analysis, quantitative analysis, infrared spectroscopy, raman spectroscopy, vacuum ultraviolet spectroscopy, interferometric spectroscopy.

PRINCIPLES OF GENETICS, by EDMUND W. SINNOTT, L. C. DUNN and TH. DOBZHANSKY, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 505 pp., 201 fig., $5.00.
QH431.S65 575.1 50-8767

This is the fourth edition of one of

America's outstanding textbooks in genetics. Entirely rewritten, it incorporates the description of chromosome mechanism as a genetical system—the physical basis of heredity — Lysenko and Soviet Science (?) to the contrary. Much of the new material strengthens the fields of population genetics and mechanisms of genic effects on development. A new chapter also appears on the nature of the gene and gene action. Much new material has been added from human heredity. Bold and effective stroke is the reprinting as an appendix the complete R.H.S.L. translation of the original 1865 Mendel report which began the science of genetics. Incidentally, no reference is made to any of the current Soviet theories or theorists on vernation, chimaeras, etc.

PRINCIPLES OF PLANT INFECTION, by Ernst Gaumann, Hafner Publishing Co., 31 East 10th St., New York 3, N. Y., 1950, 543 pp., 311 fig., 90 tables, $8.00.

Two quotations will safely introduce this book and its author who is head of the Department of Special Botany at the Swiss Institute of Technology in Zurich. The first is from the author:

"The book was written during the Second World War when Switzerland was an island in the midst of endless suffering, cut off from the mental life and literature of the rest of the world; this is why reference could not be made to some of the newer work."

The second is from a personal letter written by the English Editor, Dr. William B. Brierley, Professor of Agricultural Botany at the University of Reading (England):

"Gaumann happens to be well-known in America and enormously admired. He had a really triumphal journey through the U. S. about two years ago. The translation of his "Morphology of the Fungi" is the standard textbook on his subject there. I also am exceedingly well-known in the U. S. A.: I have often been told that I am probably the best-known English botanist. This is due to the fact that I also have tripped around the U. S. and managed to get on exceedingly well with the vast multitudes of workers I met. I happened to represent the British Empire at an International Conference in the U. S. and then visited most of their universities and experimental stations, etc. Also, during the war, one of my jobs was to act as an informal correspondent to U. S. A. botanists and plant pathologists and my weekly letters were renowned in Washington and seem to have reached most botanists and plant pathologists in North America."

PRINCIPLES OF SILVICULTURE, by Frederick S. Baker, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 414 pp., 127 fig., $5.00.

This new book is based in part on the author's 1934 "Theory and Practice of Silviculture," much of which has been scrapped. In this volume he has borne down heavily on the physiology of the tree, because he believes that the foundations of a real art of silviculture can be developed only by those who regard the forest as a biology entity. The first five chapters discuss the various types of forests and their trees, in form and composition, ecological classifications of forests, classification by site, tolerance and crown classes.

SEA AND ITS MYSTERIES, by John S. Colman, The British Book Centre, 122 East 55th St., New York 22, N. Y., 1950, 285 pp., 36 fig., 16 plates and map, $3.00.

This fascinating little manual is written for the general reader or traveler. While definitely British in its outlook, as might be expected, it offers much that is cosmopolitan, since the sea knows no national boundaries. As a reference work it is general enough to warrant a welcome in all public and high school libraries. It will not be out of place in college collections because of its history of early oceanographic explorations as well as its contributions on the nature of sea waves and surface currents which are new to marine ecology. The author, who is at present lecturer in zoology at the University of Sheffield, has been associated with the Dry Tortugas Laboratory and the Oceanographic Institution at Woods Hole, Mass. He was at one time Associate Professor at Memorial University College, St. John's, Newfoundland.

SWINE PRODUCTION, by W. E. CARROLL and J. L. KRIDER, McGraw-Hill Book Co., 330 West 42nd St., New York 18, N. Y., 1950, 498 pp., 65 fig., 82 tables, $5.00.
SF395.C248 636.408 Agr50-461

This new work is designed as a college text for animal husbandry courses. The twenty-three chapters are spread over four parts, each representing a factor in the cost of production. The first part deals with organization; the second treats of establishing swine as an enterprise; the third covers management and the fourth feed. All through the book the treatment is practical rather than abstract and cost as it affects production and profits is the supreme criterion.

TEXTBOOK OF ANATOMY AND PHYSIOLOGY, by CATHERINE P. ANTHONY, The C. V. Mosby Co., 3207 Washington Blvd., Saint Louis 3, Mo., 1950, 614 pp., 208 fig., 16 in color. $4.00.
QM26.A58 611 50-9069

This is the third edition of a text which has made a place for itself in the professional schools for the training of nurses. It has been considerably expanded, especially as regards muscle and nervous tissue metabolism, heart physiology, heat regulation, endocrine functions and menstruation. Many other extensions and improvements are also noted. The teaching aids, outline summaries and review questions of previous issues have been retained.

TRANSMISSION OF NERVE IMPULSES AT NEUROEFFECTOR JUNCTIONS AND PERIPHERAL SYNOPSES, by ARTURO ROSENBLUETH, John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y., 1950, 325 pp., 98 fig., XIV tables, $6.00.

Back in 1937 the late Walter B. Cannon and the author of this monograph published on this subject jointly. Since then important advances have been made in this field so that the junior author felt it wise to bring the whole subject up to date. This systematic study of chemical transmission at the junction of motor nerves with striated muscles and at the synopses in autonomic ganglia is the result. The role of acetylcholine as chemical mediator at autonomic ganglia and neuromuscular junctions is reviewed and critiqued.

USE OF AUXINS IN THE ROOTING OF WOODY CUTTINGS, by KENNETH V. THIMANN and JANE BEHNKE-ROGERS, The Harvard Forest, Petersham, Mass., 1950, 344 pp., no price listed.

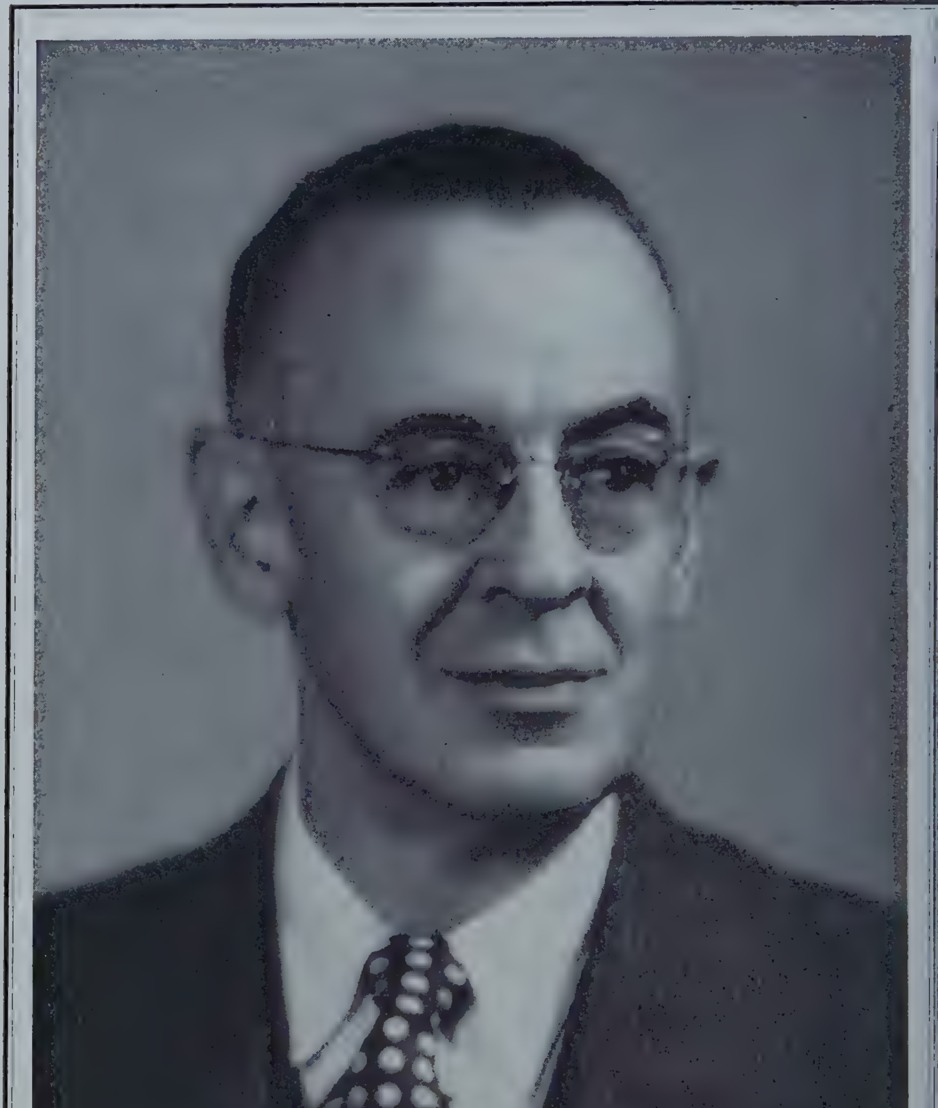
This paper bound volume is Publication No. 1 from the Maria Moors Cabot Foundation published under the auspices of the Harvard Forest. The main part of the work is concentrated in Table I in which the author alphabetically lists some 237 pages (about twenty types to the page) of plants, gives the various auxins reported and the results. In every case the original reference of the 274 in the Bibliography is coded in for further use or study.

VARIATION AND EVOLUTION IN PLANTS, by G. LEDYARD STEBBINS, JR., Columbia University Press, 2960 Broadway, New York 27, N. Y., 1950, 643 pp., 54 fig., $8.00.
QK980.S8 581.15 50-9426

In this work the Professor of Genetics at the University of California adds a new and interesting chapter to our factual knowledge of evolution, drawing on systematics, ecology, genetics, cytology, morphology, paleobotany and plant geography. Also presented are the author's theories on the alternation of generations, polyploid types and the different rates of evolution in various plant groups. This is another venture into a new field. There are fifty-nine pages of references and twenty pages of double-columned index.

VEGETATIO, ACTA GEOBOTANICA, edited by J. BRAUN-BLANQUET, published by Dr. W. Junk, 13 Van Stolkweg, The Hague, Netherlands, 1948, 385 pp. in 4 fascicles, 30 florins Dutch per yr.

This new publication appeared on the periodical horizon last year. It is the official organ of the International Association of Phytosociology. The collaborating staff enumerates specialists in plant ecology from America, Britain, Canada, France, Germany, Holland, and other countries.



NATIONAL MEETING PROCLAMATION

IN accordance with custom and constitutional requirements, I hereby proclaim to the chapters of Phi Sigma that the Council has approved a National Meeting to be held at Denver and Boulder, Colorado, on Thursday and Friday, December 28 and 29, 1950. It is the earnest desire of the Council that each chapter be well represented.

A. I. ORTENBURGER
Chancellor

DENVER UNIVERSITY AND PHI SIGMA CONVENTION

When Phi Sigma members convene for the society's national convention December 28-29, the spotlight will be focused on the University of Denver, the Rocky Mountain's oldest institution of higher learning.

The University of Denver came into being on March 5, 1864, when it was incorporated as the Colorado Seminary by a grant from the territorial governor of Colorado. At that time, Denver's population was only 3,500 and the city itself had been incorporated only six years. The seminary opened its doors with 30 students and a faculty of three. Since that time, the growth of the University has been linked closely with the growth of Denver and the Rocky Mountain West.

Today, the student body is over 10,000; faculty and staff members number more than 1,000; The University ranks among the top four Denver "industries," pouring $20,000,000 yearly into the cash registers of the Denver area; two sprawling campuses cover hundreds of acres and the first buildings of a projected $15,000,000 construction program are springing up against the skyline.

Spectacular growth has marked the University's development since the war years; its growth in the decades preceding was steady if not so meteoric.

Today, the University of Denver is composed of six colleges, 12 schools, and 15 other instructional and research units. In 1880, D. U. had a college of liberal arts, a college of fine arts, a college of music, and the seminary, consisting of a collegiate preparatory department and a junior preparatory department.

Enrollment that year totaled 61 students but in the following year, the enrollment grew to 407.

However, the period immediately following World War II has marked the greatest growth in D. U.'s history. The enrollment quadrupled from slightly below 3,000 to almost 12,000. It still hovers above the 10,000 figure.

Seven ultra-modern apartment-dormitory units have just been completed. These units provide luxury-at-low-cost housing for more than 1,000 married and single students and faculty members. In conjunction with this construction, a new half-million Student Union was built. Sporting the largest dance floor in the state, game rooms, shops and a spacious cafeteria and snack bar, the new Union offers the last word in student comfort and recreation.

Another new addition to the University family of facilities is the million-dollar sports arena. More than 7,000 fans crowd to this fieldhouse to watch D. U. hockey and basketball teams in action. Denver's largest, cleanest swimming pool is located in another section of the building and, in still another section, a large dirt area provides football and track squads with ample practicing space during bad weather. Together with the 30,000-seat capacity football stadium, the arena gives D. U. the West's most complete athletic plant.

On the downtown campus, a new 21st-century style building, said to be one of the most modern classroom structures in the nation, has just been completed. All the latest in educational conveniences are available to day and evening students who attend classes in the new structure.

Education is the primary objective of any university or college and its essential elements are an interested student body and a progressive faculty. The University's teaching staff of nationally recognized educators has established an enviable reputation for the high quality of its instruction and research.

The diversity of the University's educational program is acknowledged by the fact that students from 26 foreign countries come to D. U. to take advantage of the many opportunities offered. More students from abroad are attending D. U. than any college from Illinois to California and from Texas to California. Almost half of the student body in 1949-50 was composed of nonresidents of the state of Colorado.

Mary Reed Library, landmark of the University Park Campus, University of Denver.

The biology division, split into zoology and botany departments, is considered one of the more progressive divisions of the University. The zoology unit, headed by Dr. Fred E. D'Amour, features an outstanding rat colony, described as "absolutely tops" for use in physiological and endocrine research by one professor. The department has more than 50 majors while more than 1,000 students take either zoology or botany classes. The botany department is headed by Dr. Arthur Holch, outstanding educator and president of the D. U. Sigma Xi chapter. Together, the two departments have six full-time and three part-time professors.

A principal aim of the University is the continual research for knowledge that will benefit man in the normal course of his life. This dynamic objective has led to the establishment of many research programs and to the maintenance of staff personnel who possess broad experience in their respective fields.

A significant number of the University's research projects originate through contractual agreements with business and industrial concerns, government organizations and other enterprises. Such research units are the Institute of Industrial Research, Bureau of Business and Social Research, Bureau of Educational Research, and the Bureau of Research in Humanities and Social Developments.

One such agency, the Bureau of Physical and Biological Science Research, is supported by such agencies as the Office of Naval Research and the Atomic Energy Commission, as well as by the University itself. Cosmic ray, traumatic shock and pathological effects of radioactive cobalt are among the vital research projects included in the program. Leading universities throughout the nation cooperate in several D. U. studies, such as cosmic ray research.

The proximity of the University of Denver to the physical and human resources of a large metropolitan area places on it a further obligation to make its educational services available directly to the community and nation.

The Community Institute provides many thousands of part-time students the complete facilities of the University, permitting them to continue their academic advancement after the completion of a working day. To meet the needs of these students, the University maintains a class schedule from seven in the morning to ten in the evening. More than 200 evening courses attract several thousand adults each quarter.

Other examples of community service which are recognized as definite assets to the Rocky Mountain region include Psychological Services for Children and its allied department; the Speech Clinic, devoted to the correction of speech deficiencies; and Personal Services Center, offering vocational, educational and psychological guidance to adults; and Creative Graphics, offering outstanding art service to charitable and other social agencies.

But D. U. offers still more to its students and visitors—the unparalleled scenic beauty of Colorado. From the University Park campus, located ten miles southeast of downtown Denver, majestic Mt. Evans seemingly commands the campus. This 14,265-foot giant, whose pinnacle is the center of

D. U. cosmic ray research, lies like a great white king in the winter months. In the summer, its top is easily reached by automobile on the highest road in the United States.

The University of Denver's summer program holds a popular position among educators whose schooling continues in the months between regular classes. Each summer, DU offers more than 33 special workshops, conferences, seminars and institutes featuring outstanding guest lecturers and covering every important area of learning.

An intensive program of social and recreational activities includes informal assemblies, luncheons and barbecues, visits to world-famous Central City and the Red Rocks theater, folk dancing, hikes and other events designed to crowd the summer student's "fun calendar."

Summer students may swim, play golf and tennis, or just relax in the cool shade at any one of Denver's famous city parks. Or just a few miles away are the picnic grounds of several rocky canyons.

Not more than two hours away over an excellent highway system lies the Continental Divide, the roof of the continent, where the snow never melts and skiers cavort freely even in midsummer.

Winter sports enthusiasts find Colorado has no peer with unequalled skiing resorts dotted throughout the mountain system. Skaters find recreation at several mountain lakes or at the D. U. fieldhouse, where artificial ice provides year-round skating.

Those who like nice climate with lots of variety have come to the right place at D. U., too. Despite the general seasonal characteristics of Colorado's climate, rapid changes are the rule rather than the exception and it is not unusual for a howling blizzard to sweep in without notice only to be followed in a few hours by brilliant sunshine and rising temperatures. Temperatures of 70 and 75 degrees can be expected each December and January. Conversely, it has snowed as late as June 10 in Denver.

Unprecedented growth of the University of Denver has gone forward on the keynote "that no great city can be without a great university." And to this end, the University is keeping pace with rapid advances of the city which surrounds it. Behind its progressive, dynamic new chancellor and former Columbia University provost, Dr. Albert C. Jacobs, there seems to be little doubt that Denver, the great city that it is, will not be without its great university.

Research *vs.* Teaching

I have heard it argued on various occasions that outstanding ability in research and outstanding success in teaching do not go together: that we cannot expect both in the same person. I do not believe this for a minute. It is true that we often find one ability without the other. It is true that an inspiring teacher is often justified on his teaching ability alone. And no one can deny the value of a top-flight research worker purely on the basis of his research.

But I am convinced that the two abilities can be of the highest order in the same man or woman. I wonder if the belief that they should not be expected to coexist has not sometimes been used as an excuse on the part of an individual who has reached success in one field for his lack of industry in the other.

Perhaps a department is justified in having on its staff certain fine teachers who make no effort to advance the frontiers of knowledge, or certain recognized research workers who are something less than inspiring teachers. But the department which becomes outstanding in a university is the department which, so far as it can, adds new men to its staff who have vision and ability in both fields. The university which becomes outstanding is the university which has many departments of this sort. The painstaking and often difficult search for young men of this type will pay dividends far outweighing the cost and trouble of finding and obtaining the men.—From an address by Dean Laurence H. Snyder, University of Oklahoma.

BIOLOGY AT THE UNIVERSITY OF COLORADO

By Gordon Alexander, Head, Department of Biology, and

Olwen Williams, Secretary, Alpha Pi Chapter

One of the host institutions for this year's national convention is the University of Colorado. Its principal campus is at Boulder, with the campus of its School of Medicine in Denver. About 8,000 students are in residence on the Boulder campus, between 800 and 900 at the Medical Center, and several thousand in extension classes in various places throughout the state. The University of Colorado was founded in 1875, and is planning for January a celebration in recognition of its Seventy-fifth Anniversary.

The host department, the Department of Biology, is housed in the Hale Science Building, the Denison Building, and the Museum, all on the Boulder campus. Its facilities are scattered, and, with present enrollment, its space is not adequate. However, rooms now being used in the Hale Building for instruction and research in physics are soon to be remodeled for biology, providing the needed increase in space and facilities.

Boulder is a town with a population of about 20,000, located at the meeting of plains and mountains about thirty miles northwest of Denver. Its location makes it ideal as a center for field studies in biology. At an altitude of a little over 5,000 feet Boulder is, nevertheless, within less than twenty miles of the high elevations of the Continental Divide. A range of altitude of nearly 10,000 feet is accessible within a short distance. As an aid to study at higher altitudes the University owns a permanent camp on some 800 acres of forested land twenty-five miles northwest of Boulder. This is at an altitude of 9,400 to 10,000 feet. It is the site of Science Lodge, where sum-

Hale Science Building, occupied by the Departments of Biology and Physics.

University of Colorado Museum.

mer classes in geology and biology have been conducted and to which trips are made at intervals through the winter by an advanced class in plant ecology.

The availability of the wide range of field conditions is reflected in the emphasis in the Department of Biology on ecological and on floral and faunal studies. This emphasis has been evident since the early days of the Department. Francis Ramaley; Head of the Department for some forty years preceding his retirement in 1939, was a pioneer in plant ecology, one of the founders of the Ecological Society of America and a president of that society. T. D. A. Cockerell, Professor of Zoology for over thirty years, and Junius Henderson, first director of the Museum and its founder, were equally well known in faunal zoology. These men were the Big Three; and it is interesting to note that, while the Department of Biology is much larger today than when they were alive and active, the research emphasis has not shifted radically from the days when they constituted the staff. Modern methods of study have been added, but the mountains still provide the University of Colorado with its best laboratory.

Today the Department of Biology has fourteen full-time staff members. There are approximately one thousand separate student registrations each term. Some seventy-five upper division and thirty graduate students major in the Department. Of the graduate students about a dozen are part-time assistants. Most of the graduate students are candidates for the Master's degree but several are working toward the Ph.D.

Graduate work is carried on in plant and animal morphology and physiology, in genetics, and in ecology, most

Library, University of Colorado, with foothills in background.

of the graduate majors at the present time being engaged in ecological research. A rather extensive program of cancer research, with hamsters as the experimental subjects, is under the direction of Dr. Edward D. Crabb. A long term survey of aquatic biology of Colorado lakes and streams is being carried on by Dr. Robert W. Pennak and his students. Dr. John W. Marr and his students are carrying on a program of research in mountain plant ecology, involving tree growth particularly, and calling for periodic expeditions, even in mid-winter, into the "high country." All members of the permanent staff, however, are active in research, the three projects named being those probably of widest interest.

One of the most stimulating activities for biology students at the University of Colorado is provided by Phi Sigma. Alpha Pi Chapter was installed by Dr. Ortenburger on May 24, 1941. Its beginning was auspicious, and the Chapter was well-established, fortunately, for the war years soon cut into its activity. Since the war recovery has been speedy and successful. With between thirty and forty active members at the present time the Chapter is looking forward to its part in entertaining the national convention this year, hoping to introduce the delegates to its institution and to the region it finds so interesting.

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Freedom of Speech

A university is not a Department of State, nor a government laboratory, nor a public high school, nor a radio station, nor a newspaper. Universities are curious institutions. They seem to need more freedom of speech, if they are to thrive, than do most other groupings of human beings. This need may be undemocratic, but it is a fact of life. Universities are queer places, granted, and university teachers are often queer people. We do not really understand much about them in terms of formal sociology. But we do know from experience that they cannot stand much screening of their Faculties, much interference with their odd ways. What happened to German universities under the Nazis, to Russian universities under the Communists, has shown us that much.—*Harvard Alumni Bulletin.*

EDITORIALS

Elsewhere in this volume is a group of articles on how to write scientific articles for publication in the popular press. The first was written by Dr. Edwin E. Slosson, one of the greatest of our American science popularizers. The other was written by his successor in the directorship of SCIENCE SERVICE, Dr. Watson Davis. Through the kindness of Dr. Davis, we have been graciously permitted to reprint these articles. We cannot but lament the need for these articles. How comparatively inarticulate most college students are is a matter deplored by all graduate professors. Even some graduate students have to be forced into the preparation of a seminar paper in order to get for the first time the feel of writing.

When the unexpected happens, and college people do get the itch to take the caps off their ink bottles, the results are not always encouraging, if desirable.

All too frequently, professors forget the need for clarity and their writings vary sometimes from cloudy to absolutely obscure. Here is a good example. We were running down a plant in a recently published state flora. The little-used technical term "hirtellous" came up in a plant diagnosis. Turning to the author's glossary we found: "Hirtellous. Minutely hirsute." So we turned to "hirsute" and found: "Pubescent with rather course or stiff hairs." Turning to the first word we found: "Pubescent. Covered with pubescence, an indument of hairs (trichomes)." "Indument" was a new one. We looked it up. It was not listed, so we turned to "trichomes" and found: "An outgrowth from the epidermis of plants, as hair, scale, bristle or prickle." Combining all these definitions, we might arrive at this definition of the original cause of all our trouble: "Hirtellous. Covered with an outgrowth of minute prickles (or scales, bristles or, possibly, hair)."

Whether this definition would qualify in a plant taxonomy class is something else again. Whether it was right or wrong, just why did we have to run it down through so many steps to get some sort of an understanding of the term's meaning? Why, in other words, could not the esteemed professor of botany who first put that glossary together have foreseen that someone other than postgraduate taxonomic specialists might want to use his book and his glossary?

If "knowledge is power," then ability for adequate self-expression in whatever medium might be necessary is the key to the attainment of that power. All the knowledge in the world avails little if it is locked up in the mute helplessness of inarticulation.

For this reason the pages of this magazine have always been open to the contributions of any member of Phi Sigma. Since the last national meeting in Albuquerque, there has been a notable increase in the number of members' papers published in our pages. This means that there has also been a proportional decrease in the number of nonmember contributions and reprints of articles from other publications.

This, it has always seemed to us, is more in keeping with the avowed purpose of our fraternity—"to foster a research spirit in our member." That research spirit will be of little use to those same members if they are unable to express their results. To give our fraternity members experience in self-expression by means of the written word is surely one of the noblest ideals to which "The Biologist" could be dedicated.

CONVENTION YEAR

On another page in this issue is the Chancellor's call to another National Meeting. If it is only partly as successful as the Albuquerque sessions two years ago, it will still be well worth while. That the meeting will be closer to the geographic center of the United States than many in years gone by is one thing. That it will be held on two university campuses is not only another, but a "first" in Phi Sigma history. Finally, that it will include some other unusual features makes it something to look forward to.

The first meetings will probably be held on Thursday morning and afternoon at the University of Denver. The whole party will leave by bus for Boulder early Friday morning, hold one session there at the University of Colorado and spend the rest of the day en route back to Denver in the guidance of the Colorado Game and Fish Commission. Other events are planned, but we will leave their announcement to other authorities when the time comes. While there will undoubtedly be a convention banquet, delegates might do well to take some "roughing" clothes along. If the original plans of the Colorado Game and Fish Commission people are followed through, there may be some snow to wade through. The tentative plans called for a roundabout trip back from Boulder to Denver, with a stop or two to see the deer-yards if there had been snow enough to cause the deer to come down out of their summer haunts.

Incidentally, if any of the delegates are camera fans, let them remember that even in winter the city and the environs of Denver are definitely photogenic. No one thought to tell us that two years ago when we went to the University of New Mexico for our meetings. Of course there were a lot of postal cards of views around and about Albuquerque on sale in the drug stores and at the U. of N. M. bookshop. No commercial art can quite compare with the thrill one gets out of pictures one has been able to select for one's self.

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OBITUARY

Banner Bill Morgan

1915-1950

Stricken on a train in Wyoming while returning to Wisconsin from a Pacific Coast trip, Doctor Banner Bill Morgan died suddenly late this summer. He was a native of Bandon, Oregon, entered Oregon State College in 1933 and graduated there in 1937 with a B.S. He did his work for his master's in science at the same school, with further graduate work at Iowa State from 1938 to 1939, became a fellow at Wisconsin in 1939 and received his Ph.D. there in 1941. Having taught in various colleges, he became Instructor in Veterinary Science at Wisconsin in 1941, Assistant Professor in 1943, Associate Professor in 1945, and Professor in 1949.

He was active in many fields and in many scientific societies. He had served for many years as volunteer Curator of the Wisconsin Historical Society's philatelic collections and devoted much time to bringing order into the chaotic condition in which he found it. He was a member of the Historical Society's Philatelic Committee and helped in bringing about a working agreement with the Postal History Society. He was a long-time pillar of the Wisconsin Academy of Science and Letters, holding the office of Secretary-Treasurer from 1944 until his death.

Doctor Morgan was a member of the Society of Zoologists, the Society for Experimental Zoology, the Society for Tropical Medicine, the Helminthological Society of Washington. He was active in Gamma Alpha, holding the editorship of the "Gamma Alpha Record" up to his demise.

"Banner Bill" entered Phi Sigma in the Alpha Mu initiation class of May 1937 at Oregon State College. He was their very active Chapter Delegate at the 1937 Indianapolis Convention and presented a paper on the functioning of the Golgi Apparatus in plants at the Phi Sigma scientific sessions that year.

In collaboration with Doctor Philip A. Hawkins of the University of Michigan, a new manual on "Veterinary Protozoology" was published by the Burgess Company of Minneapolis in 1948.

Doctor Morgan was a dynamic personality, one of those characters who left a definite imprint on everyone with whom he became acquainted. He was in the best possible sense of the term, socially, educationally and scientifically, a "go-getter." The University of Wisconsin and American science have all been enriched by his living. They, and we who knew him, have all been impoverished by his going.

PHI SIGMANS IN ROTARY

Carl P. Thompson of Stillwater, Oklahoma, Phi Sigma graduate of Kansas State College (B.S., 1904), Oklahoma Agricultural and Mechanical College (M.S., 1922) and Iowa State College (M.S., 1923; Ph.D., 1937), is a District Governor of Rotary International, world-wide service organization, for 1950-51.

Dr. Thompson is Administrative Field Representative for Oklahoma Agricultural and Mechanical College, and has been on the staff of that College for 31 years. He is Past National President of the Block and Bridle Club, and has been active in civic and professional groups. He is affiliated with Acacia, Alpha Zeta, Phi Sigma and Gamma Sigma Delta fraternities.

Last year, Milton H. Hood of Youngstown, Ohio, Phi Sigma graduate of Mount Union College in Alliance, Ohio (B.A., 1949) was a Rotary Foundation Fellow. One of 55 graduate students to study on a Rotary Fellowship, he attended the University of Dublin, Ireland, where his major field of study was education. He is now teacher of Social Studies at the Youngstown (Ohio) East High School, and is taking graduate work at the University of Pittsburgh. (See attached news release for complete background data on Rotary Foundation Fellowships.)

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TO A MOSQUITO IN A LAMP GLASS

Within the Circle of my glassy Hell
I watch you writhe, and turn the flame that sears;
Roast, vile Anopheles! Your thin, lost yell
Drifts in sweet cadence to my pointed ears.

You spent, with low-down swamp and feverhag,
A life of vampire-banqueting and sin,
Till from the Brink your tired wings failed to drag
Your blood-pumped belly, so you tottered in!

You should have lived a good life, mossie dear,
And listened to the preacher bee's bizz-buzz:
"My zun, deny yourself all joyzz down 'ere,
Cozz there'zz joyzz later on fer beezz like uzz!"

You make me Dante; nay, greater than he,
He visioned Hell, but I, with private spit,
Am verily the Devil, as I see
My Circle has a wick and fuel in it!

So roast, you little sinner; sad I ween,
The fact, today my Hell and Temper's hot,
Had I but been in humor, death had been
The upper Circles of the Spray or Swat!

Louis H. Clark
"The Bulletin," Vol. 71,
No. 3653, p. 13
Wednesday, February 15, 1950
Sydney, N.S.W., Australia

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1915 March 17, Alpha Chapter organized, Ohio State University, Columbus.
1916 May, Central Governing Body organized, BIOLOGIST first issued.
1917 June, last War-time BIOLOGIST issued.
1921 February, BIOLOGIST revived.
1924 December, First National Meeting, Constitution revised, Washington, D. C.
1925 December, Second National Meeting, First Science Program, Kansas City.
1926 December, Third National Meeting, Second Science Program, Philadelphia.
1927 December, Third Science Program, Nashville.
1928 December, Fourth National Meeting, Coat-of-Arms adopted, Fourth Science Program, New York.
1930 January, Council Meeting, Ritual Revised, Norman, Okla.
December, Fifth National Meeting, Fifth Science Program, Cleveland.
1931 Phi Sigma Letters Registered, U. S. Patent Office.
1932 December, Sixth Science Program, Atlantic City.
1933 June, Sixth National Meeting, Seventh Science Program, Chicago.
1935 December, Seventh National Meeting, Eighth Science Program, St. Louis.
1937 December, Eighth National Meeting, Ninth Science Program, Indianapolis.
1939 December, Ninth National Meeting, Tenth Science Program, Silver Anniversary, Ohio State University, Columbus.
1941 December, Tenth National Meeting, Dallas, Texas.
1946 December, Eleventh National Meeting, Boston, Mass.
1948 December, Twelfth Meeting, Eleventh Science Program, Albuquerque, N. Mex.

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